AMERICAN VETERINARY REVIEW.

JANUARY, 1903.

All communications for publication or in reference thereto should be addressed to Prof. Roscoe R. Bell, Seventh Ave. & Union St., Borough of Brooklyn, New York City.

EDITORIAL.

EUROPEAN CHRONICLES.

PARIS, Nov. 15, 1902.

IT is but a few days since the first International Conference on Tuberculosis was held in Berlin, and by the time this will reach our readers, perhaps many have heard or read of the event, and then will consider my subject for a chronicle rather stale.

But how can I help it? Anyhow, from all reports, the first international conference did not prove what was anticipated.

From the opening of the meeting, one might expect much. The number of scientific authorities who were present justified all expectations. It seemed that the event would differ from the banality of ordinary congresses; that there would be not only more or less interesting reports on the subject of tuberculosis and papers on the struggle against it, but also some facts to draw to a focus the various questions yet unsolved, and declarations from which the official representatives present might draw material to offer to their respective governments, to realize the great object in view: the struggle against the disease.

But such has not been the case; and, leaving aside the great success which was obtained by the visits and inspections of the two magnificently and luxuriously built and equipped sanitoriums of Belzig and Beelitz, it may be said that the principal subject which occupied the congress was the still unsettled question of unicity of tuberculosis and of the transmissibility of the disease from man to animals and *vice versa*.

The director of the imperial sanitary office, Dr. Kohler, read

in his report the numerous *pro* and *con* arguments relating to the subject, without expressing in his conclusions a firm and categorical opinion. For him, in the actual condition of present knowledge, no one can affirm the identity nor the duality of human and of bovine tuberculosis, but that the principal danger is, not in the transmissibility from animal to man, but from man to man. Yet he sees no objection to the boiling of the milk as patronized by some.

Prof. Nocard answered by a clear and firm declaration in favor of the unicity of tuberculosis. His arguments are powerful, as usual, and if some have already been mentioned, the results obtained by his most recent experiments are still more positive. His conclusions are:

Bovine tuberculosis is transmissible to man. . . . It is specially when drinking the milk from tuberculous udder that man contracts the disease from bovines. . . . The danger exists specially for those who, like children or sick people, make milk the essential or exclusive part of their diet. . . . All cows suffering with tuberculous mammitis ought to be removed from all places where milk production for public use is the principal object. . . . These stables ought to be submitted to periodic inspections. . . . While waiting for those, let the public be always advised that the simplest and surest means of guarding against the danger is the boiling of all milks.

Prof. Arloing spoke in the same sense and with the same conclusions.

The answer of Prof. Koch was anxiously looked for. He spoke for an hour and a half, defending all his theories. For him there does not exist one single observation strictly evident of contamination of people having partaken of tuberculous milk; isolated facts without post-mortem and without proof excluding other sources of infection are not thoroughly demonstrated; and even with them it would be necessary to show that bovine tuberculosis was the cause. For him, interhuman contagion only needs to be taken in consideration in the struggle now waging with the disease.

To resume the entire result of the first International Conference, it is this: A dialectical fight between advocates and adversaries of the unicity of tuberculosis without results. Notwithstanding concessions made by both parties, the question remains open.

* * *

In my "chronicles" of January and of August last, I made allusions to experiments that, for the Société de Médecine Veterinaire Pratique, Prof. Nocard had been engaged in carrying out. Those experiments had been divided into two series. The results obtained in those were probably the ones alluded to by the learned professor in his remarks at the Congress of Berlin. Those of the first series, our friends know. What are those of the second?

In this, the question to decide was, if possible, the degree of virulency between bovine and human tuberculosis. Was it in the bovine? Was it in the human? Experimental researches have answered. Post-mortem examinations have established the proofs.

Monkeys were bought, divided into lots; those that were to be fed with bovine tuberculous matter and those that were to receive human tuberculous food. The entire progress of the second experiment will be laid before our readers, with that of the first, as soon as the report of the commission shall be made. In the meantime, let me say that the lesions which it has been my good fortune to see leave no room for doubt.

When the cadavers of the animals on experiment were laid open for comparative post-mortems, those that had received the bovine matter offered frightful lesions of tuberculosis, with tuberculous deposits of enormous sizes, while, on the contrary, those that had partaken of human tuberculous cultures presented but trifling lesions, comparatively insignificant, when beside the others. And, yet, the feeding, with the exception of the origin of the tuberculous matter, had been exactly the same for all, and for all the cares had been the same and the mode of infection carried in the same way.

Prof. Koch will probably bear these facts in mind before he is again tempted to renew his assertions, and if, as it seems to be generally admitted, probably the great danger in the propagation of tuberculosis is from man to man, he certainly cannot deny that with greater virulent power bovine tuberculosis must not be ignored. Anyhow, he has already made some concessions, as I have said before, in not objecting to the boiling of the milk.

I have seen to-day the result of another experiment on tuberculosis, which no doubt will interest our readers, but must keep it for my next.

* * *

BARIUM CHLORIDE.—When after observing on two horses the fatal toxic effects of chloride of barium, and after having studied its action when given by the digestive tract, the connective tissue and through the circulation, Dieckerhoff made known his observations and recommended its use in intravenous injections in the treatment of colics in horses, many were those who resorted to it, and chloride of barium became the subject of many important investigations all over Europe, where principally in German publications they were recorded.

It was in 1895 that Dieckerhoff published the results of a first series of 51 cases, and a few months after a second series was made known, in which 136 cases of colic had received the treatment, with only 12 deaths; each one of those was proved at the post-mortem to be due to special lesions, such as twisting of the intestines, volvulus, hernia, or entero-peritonitis following strangulation.

Of course, American veterinarians did not remain indifferent to the new treatment and chloride of barium became also the subject of records and publications which are found in our veterinary papers, among which I find the names of J. J. McCarrey in 1896, of R. W. Ellis and W. P. Straughan in 1897, also that of J. E. Brown in the same year. The general results recorded in American journals are favorable to the use of the salt, and accidents like those recorded by Brown seem

to argue with those among the fatal cases of the second series of Dieckerhoff. That met by Dr. Straughan (sloughing of the jugular, followed by fatal hæmorrhage), is probably of a different nature. But, yet, we do not hear anything more from the practitioners of the new world. Has the drug been dropped? Have the records been unsatisfactory?

Such is not the case on this side of the water, and numerous are those who have employed it without ever having had a single accident referable to the chloride. In a recent communication of Prof. Cadiot, who was the first, I believe, to introduce its use in France, I find that Dahlenburg has treated 32 cases successfully; Gruner 48 without any accidents; Hutyra, of Budapest, 191 cases without any fatal effects. Cadiot, when he first spoke of it at the Société Centrale, had already 32 cases successful, and since has treated 162, among which there were 21 deaths by other causes than the toxic effects of chloride of barium.

There is, however, a certain condition where the use of the salt may be followed by fatal results. Its action upon the heart explains it, and if Siebert, Mouilleron, Krentzfeldt, Ries and Mollereau have had cases where the results were not those that they expected, perhaps the deaths may be attributed to the action upon the heart. The doses which were recommended first by Dieckerhoff varied between 0 gr. 50 to 1 gr. 25. according to size. As much as 2 grammes have been used for large horses. At first Cadiot injected somewhat similar doses. But later, by close observation, he has been brought to resort to injections of weak doses repeated, even several times during the cases, so as to obtain all the useful effects of the drug. And now he recommends a first injection of 0 gr. 25 to 0 gr. 50, then 15 minutes later of another of 0 gr. 20 to 0 gr. 30, repeated if necessary 15 or 20 minutes after.

And, again, in some varieties of intestinal obstruction, when the case has existed some length of time, when the organism is already intoxicated by intestinal fermentations, it is better to use only doses of 0 gr. 25 to 0 gr. 40, repeated three or four times about every quarter of an hour.

Thus administed, chloride of barium is still very active, quick in its effects and perfectly inoffensive. At the clinics of the Berlin school, 3000 injections have been done without any fatal accident or toxic effects. And doses of 0 gr. 40 repeated two or three times on 445 cases of colic among the omnibus horses in Paris, have given the same results.

These make an irrefutable record.

* * *

THE IMPORTANCE OF A STUDY OF PARACITISM.—The subject of parasites among domestic animals is one which presents many points of interest, and offers a wide field of observation. Many active researches have been made, and many are the works which were written treating of the history, life, effects, etc., of parasites, and every veterinarian is acquainted with those of more modern times and specially with that of Neumann, which was brought within the reach of all English readers by the excellent translation that we owe to Fleming. No doubt the publications that we have from the Bureau of Animal Industry have done much to enlighten our American observers, but yet it seems to us that our *confrères* on the other side of the Atlantic are a little indifferent to the subject, if we are allowed to judge from the lack of communications on their part in our veterinary journals; and, still, outside of the strictly scientific point of view of parasitology, the diseases and symptoms which are related to parasites are of the utmost importance, and the general practitioner, and certainly the sanitarian cannot be allowed to ignore them. They are very common in practice, all our domestic animals are suffering with them, their intimacy in the causes of diseases of both human and veterinary patients, everything in fact points to the great importance of the subject.

If, as it seems to us, American veterinarians are neglectful or indifferent, and if our publications seem to be lacking in reference to animal parasites, it is not the same in Europe, and in almost every journal, articles are found telling of symptoms, treatment, etc., in various cases of different parasitic diseases.

Bovine *cysticerci* have lately been the subject of quite a num-

ber of contributions in Italian and English papers. In the first Dr. Lusé, alluding to some twenty cases which he had found in carcasses of bovines in slaughter-houses, mentioned four specially interesting, where the parasites were found in the tongue, masseter muscles, epicardium, endo- and myocardium, stomach, lungs, œsophagus. They were in fact almost all over except the brain.

After these records relating to cysticerci, our English cousins in the *Record* call attention to several cases of *cœnurus cerebralis* reported by two veterinarians, Dr. Parker and Dr. W. C. Patrick. The former had three cases—one recovered by purging and cold water; another died comatose; the third was killed. Dr. Patrick speaks of two cases upon which he operated by trephining, puncture and removal of the hydatid cyst; both were followed by recovery.

And then, I find in the *Il Nuovo Ercolani*, from Dr. G. de Angelis, the record of a rare case of *echinococci*, rare principally by its seat, it having been found in the cerebellum. The parasite had given rise to such characteristic brain manifestations that a diagnosis of acute hydrocephalitis had been made and that post-mortem partly confirmed, as far as symptomatology went.

It is, therefore, very evident from these reports that parasites are still plenty on the field for studies, and that, if much is already known about them, there still remains enough for all of us to work upon, find out and record. A. L.

THE OUTBREAK OF FOOT-AND-MOUTH DISEASE.

The announcement of the appearance of this highly contagious disease in the New England States was officially proclaimed by the Massachusetts Cattle Bureau on Nov. 26, and the State authorities at once placed a quarantine upon all infected districts. In order that REVIEW readers might have an authoritative statement of the extent of the outbreak, as well as its probable origin, the measures being adopted to check its progress and eradicate it from our previously immune herds, a let-

ter of inquiry was addressed to Dr. D. E. Salmon, Chief of the United States Bureau of Animal Industry, and he promptly replied as follows:

U. S. DEPARTMENT OF AGRICULTURE,
BUREAU OF ANIMAL INDUSTRY.
147 MILK ST., BOSTON, MASS., Dec. 12, 1902.

Editors American Veterinary Review:

DEAR SIRS:—Replying to your letter of the 9th instant, I would say that it has not been discovered positively how the contagion of foot-and-mouth disease was introduced into Massachusetts. The first cases appear to have been at Chelsea, not very far from the docks, and the most plausible explanation appears to be that the contagion was brought over with hay or bedding for horses. These early cases occurred in August or possibly earlier. It appears strange that the disease was not recognized sooner, but no one was expecting it, and probably the cattle owners concealed it. At present there appear to be about 100 herds affected in Massachusetts, containing in the neighborhood of 2,000 head of cattle. There are 13 herds in Rhode Island containing about 300 head, and 20 herds in Vermont containing something over 300 head, and two herds in New Hampshire. The places where the disease has been discovered have been quarantined under State authority, and the shipment of stock from the infected States, with the exception of New Hampshire, has been prohibited by the United States Department of Agriculture. We have slaughtered some of the outlying herds and are making arrangements to kill off diseased cattle as fast as possible. It is very difficult to maintain quarantines and stop the spread of disease while the affected animals are alive. I enclose copies of circulars of information which we are using. Very respectfully,

D. E. SALMON, *Chief of Bureau.*

* * *

The circulars referred to are as follows:

INSTRUCTIONS CONCERNING INSPECTION FOR FOOT-AND-MOUTH DISEASE.

U. S. DEPARTMENT OF AGRICULTURE,
BUREAU OF ANIMAL INDUSTRY,
WASHINGTON, D. C., December 3, 1902.

To Inspectors Engaged in Eradication of Foot-and-Mouth Disease:

The eradication of foot-and-mouth disease is the most urgent and important problem confronting the live-stock industry at this time. The inspectors and others engaged upon this work are helping to make an imperishable part of the veterinary sanitary history of the country. Should the disease become more prevalent or escape to the West, the condition would constitute a grave calamity which might easily reach

national proportions. If the disease is confined to its present area and is exterminated there, great credit will be awarded to all who have had a part in this memorable achievement. It is hoped that every individual inspector, agent, or other employee will realize his own great responsibility in this service and will do all that he can do to insure the early and complete eradication of this plague.

For the purpose of explaining and systematizing the work, the following instructions are issued:

Coöperation Between the States and the Federal Government.

The work in hand will be carried out, so far as possible, in coöperation between the authorities of the States and the Bureau of Animal Industry. In some instances agents of the Bureau of Animal Industry will be given commissions from the Cattle Bureau or the Cattle Commission of a State, so that they may exercise authority that is not directly conferred by the Bureau of Animal Industry. The responsibility of the inspectors and agents is in large degree a joint responsibility, as they will be clothed with authority both from the State and the Nation. It is therefore important that all work shall be conducted in full harmony with the State and local inspectors.

General Plan of Operation.

The general plan of operation will be to locate every diseased animal or infected place as soon as possible, and then to establish such restrictions as will effectually prevent the transfer of infection. All infectious material must be held in seclusion until it has perished or has been destroyed; that is to say, until the subjects have fully recovered or have been killed and the premises disinfected.

Everyone is encouraged to send to Dr. S. E. Bennett, 147 Milk Street, Boston, Mass., any reports or rumors that he may hear in regard to the probable or possible existence of disease in any new locality.

Suggestions Regarding Inspections.

In inspecting animals with the view of discovering the existence of foot-and-mouth disease, it should be borne in mind that the acute symptoms causing appreciable illness are of short duration. The cow becomes feverish and depressed not more than a day before the vesicles appear in the characteristic locations. After this the temperature falls to near normal. The vesicles last one or two days, and after they have broken, unless the areas involved are exceptionally large or complications arise, healing starts almost at once. If the vesicles are large or numerous upon the teats or about the hoofs, soreness of these regions may remain for two weeks or more. Therefore, if an inspection is made for the purpose of determining whether a herd has passed through the disease, and

in the absence of superficial erosions upon the pad, within the lips, upon the gums or tongue, special weight should be placed upon slight lameness, undue moisture of the skin between the toes, and sore teats.

It may be of value in some instances to apply at the creamery or milk shipping station for information as to the quantity of milk produced at the time it is suspected that the herd was affected. A more or less sudden fall in the yield, lasting for one or two weeks, might be a valuable clue. Much may sometimes be gained by conversation with cattle dealers and live-stock owners in regard to outbreaks in other places.

In sheep and swine the symptoms are about as they are in cattle, but the vesicles are more likely to be confined to the feet. All exposed cloven-footed animals are to be regarded as possible carriers of the disease and are to be quarantined and reported.

How to Avoid Spreading Infection.

It is of the utmost importance that the inspectors shall not themselves carry infection from place to place. This may be avoided by scrupulous attention to the following precautions:

Each inspector shall be provided with a rubber coat coming to within 9 inches of the ground, a pair of rubber boots, and a bottle of creolin or some mercuric chloride tablets. He should also have a cotton skullcap that may be carried in the pocket of the rubber coat. Before going into a stable in which there is any reason to suspect that infection may exist, this special attire shall be put on. Upon coming out, the exposed parts of the coat and the boots shall be washed off thoroughly with a 3 per cent. solution of creolin or with mercuric chloride solution, 1 to 1,000. All dust, dirt, and manure shall be removed from the coat and boots in this way. The inspector shall then remove his cap and place it in the pocket of his coat, pack his special clothing in a bag provided for this purpose, and then disinfect his hands. The cap shall be disinfected at the close of each day's work. If so much washing makes the hands sore, rubber gloves may be worn, if disinfected carefully each time after use.

Importance of Absolute Quarantine.

Do not fail to impress upon each person in charge of a quarantined herd the absolute necessity of a strict and complete quarantine. Explain what such a quarantine means. Give to each such person a copy of Circular No. 38, B. A. I., on foot-and-mouth disease. Especially impress the importance of excluding all visitors, and of those who have been about infected cattle or premises keeping away from the stock or premises of others. Remember that dogs and cats must be confined, and all stray animals excluded from quarantined premises. Keep all cattle dealers away.

Reports.

Make reports carefully and promptly. If special conditions of importance arise telephone or telegraph to Dr. S. E. Bennett, 147 Milk Street, Boston. Do not fail to report anythtng that may have a bearing on the origin or the additional distribution of this disease.

D. E. SALMON, *Chief of Bureau.*

* * *

FOOT-AND-MOUTH DISEASE;—WARNING TO ALL OWNERS OF CATTLE, SHEEP, AND SWINE.

Why this Circular is Issued.

Foot-and-mouth disease of cattle, sheep, and other ruminants, and swine has recently been brought from some foreign country and has appeared in a few localities in Massachusetts and some adjacent States. Since this disease has been unknown in America for many years, and then but to a limited extent, there are few who have practical knowledge of its nature. As it is vastly in the interest of all owners of cattle, sheep, and swine that this disease shall be eradicated promptly, and as they can render important aid, this circular of information is commended to their careful attention.

What Foot-and-mouth Disease Is.

This disease is an excessively contagious malady peculiar to ruminating animals (cattle, sheep, goats, deer) and swine. Rarely is it transmitted to man. It is characterized by the eruption of vesicles or blisters in the mouth, upon the heels, or between the toes, and upon the teats or udder. The appetite is depressed, the milk flow diminishes, the animal loses condition and becomes lame. After a day or two the vesicles break, peel off, and leave a raw surface that may heal in a few days, or, especially upon the feet and teats, that may remain sore for a long time and lead to serious complications. The death rate is very low, but it attacks the whole herd and many animals are seriously damaged, so that the loss to a herd owner is heavy.

The Importance of Exterminating this Outbreak Here and Now.

European cattle owners have learned by long and bitter experience that this disease is the source of most discouraging and not infrequently of ruinous losses. While the disease does not often kill, it damages, temporarily or permanently, every cow it attacks to the extent of from $10 to $40. The total loss on a herd is usually enough to wipe out a dairyman's profits for a year or two. The effect upon fat animals is quite as serious. It is not uncommon for the stock owners of England, France, or Germany to be injured by this disease, in a single year, to the extent of $5,000,000. With our much larger holdings of live stock

in this country, the possible losses from this disease, if it were to become general, are stupendous and incalculable. At present the disease exists over a comparatively small area. It is confidently believed by the experts who have investigated the situation that it can be controlled and eradicated. It is important that this shall be done, not only that the other parts of the country shall be protected, but also to prevent the frequent visitations of the disease that otherwise would afflict the live stock of New England. To this end, the aid of all stockmen and farmers is requested.

How Foot-and-mouth Disease is Spread.

There is no other disease that is so readily and certainly conveyed by contact. It is also conveyed by exposing healthy animals, even for an instant, to the stables, yards, pastures, or cars that have been occupied by affected animals; by buckets, cloths, brushes, or other objects that have been used by or on diseased cattle; by the use of forage exposed in mangers or even in the distant parts of the stable harboring infected animals. The disease is also carried by small animals, as dogs, cats, rats, birds, or upon the hands, boots, or clothing of men. A road along which diseased cattle have passed, may retain enough virus to infect other cattle that pass over the same place several hours later. Premises occupied by diseased cattle are not safe for other cattle for a few months after the disease has disappeared. In short, it is to be remembered that every diseased animal is dangerous, and also every animal, person, or thing that has been near it or has been near a place occupied by it. Inspectors may avoid the danger of carrying the disease by cleanliness and disinfection.

How Foot-and-mouth Disease may be Recognized.

The symptoms of this disease most obvious to stockmen are: Sluggishness, shivering, poor appetite, stiffness or lameness, collection of saliva upon the lips, slavering, slobbering or drooling, sucking and swallowing motions of the mouth and throat, smacking of the lips, blisters inside the lips, upon the gums, tongue, or roof of the mouth; later, raw sores in the same places. Blisters and sores may also form upon the teats or udder and upon the heels and between the toes. The flow of milk lessens or ceases and the subject usually loses weight. All these symptoms may not be present in the same animal, and all are never present in an animal at one time. Moreover, the symptoms occur in varying degrees of severity. They may be very mild or very intense. The later symptoms may be intense lameness, emaciation, sore teats and garget. With sheep and swine the feet are chiefly affected.

What Owners May Do to Protect their Stock Now and for the Future.

The most important matter is to prevent the infection of animals not

yet exposed. This can be done by avoiding the purchase of affected stock; by excluding all outside animals from the herd or flock; by each person who comes near healthy stock avoiding contact with diseased animals or the places or things contaminated by them; by excluding visitors from the cow stable, sheep and hog pens; and by preventing the access of strange or stray animals, which may carry the virus on their feet or hair, although they are themselves in good health. Neither cows nor bulls should be moved from one place to another for service.

Should the herd or flock become infected, the appearance of the first evidence of disease should be immediately reported to the Chief of the Cattle Bureau, a State Cattle Commissioner, the local inspector of live animals, or to the Bureau of Animal Industry office, 147 Milk Street, Boston, Mass.

Urgent Necessity of Immediate Report of First Symptoms Causing Suspicion.

The eradication of this disease and the removal of all quarantine and other restrictions upon the cattle trade can be materially hastened by the live stock owners themselves, if they will promptly report the first evidence of foot-and-mouth disease in their herds or localities. This fact can not be suppressed and the sooner it is brought to the notice of the proper authorities, the less the resulting damage will be. It is to be hoped that citizens everywhere will realize the importance of aiding the authorities who are working to eradicate this destructive plague, and they can render no more valuable service to themselves, their localities, or the nation than to immediately report a newly infected animal or place.

Fine for Neglect to Report the Disease.

The law of Massachusetts imposes a fine of $100 on any person who suspects the existence of this disease and fails to report it in writing to the Chief of the Cattle Bureau or his authorized representative.

Approved:

JAMES WILSON,
Secretary of Agriculture.

D. E. SALMON,
Chief of Bureau.

WASHINGTON, D. C., *December 4, 1902.*

* * *

The great confidence felt in the sagacity, integrity and ability of the Bureau of Animal Industry has been sufficient to prevent that feeling of great alarm which would otherwise be experienced by the veterinary profession and the country at large through the presence of this European scourge upon our soil, for it has shown its capacity to cope with such emergencies

even when the danger was greater and its facilities less perfect. But this feeling of confidence in our national representative should not blind us to a thorough appreciation of the fact that we have upon our shores one of the most actively contagious diseases of the Old World, and one which carries with it great financial loss to our stock-raisers, for should it slip through the quarantine lines already established, and find its way into the vast Western country and its permanent invasion be effected, the calamity to the nation could scarcely be over-estimated.

It is the certain duty and will be the pleasant privilege of every veterinarian to coöperate with the Federal authorities in every way possible to stamp out as quickly and as thoroughly as possible this common danger.

IOWA TAKES A LONG ADVANCE STEP.

At the last meeting of the Iowa State Veterinary Medical Examining Board, composed of Drs. W. A. Heck, H. E. Talbot, and S. H. Johnston, the following resolution was adopted:

Section 2, Article 4.—"Applicants graduating after the third Tuesday in June, 1903, must have pursued the study of veterinary medicine, surgery and dentistry for at least three years, including three regular courses of lectures of at least six months each in different years in some legally incorporated and recognized veterinary college." (A recognized veterinary college or department for the purpose of these regulations shall be one that is recognized as having all in its course of study and staff of instructors that veterinary colleges giving instruction in the United States have and as having all the requirements that a college giving instruction in veterinary medicine, surgery and dentistry should have.)

The far-reaching effects of this decision for the good of veterinary science can not be over-estimated, for it will not only lift the profession to a higher plane in the State of Iowa, but it will break through the ice of indecision in other commonwealths in the West, paving the way to that general and common requirement which will in time make the qualification of

veterinary licentiates identical in every State in the Union. The Iowa Board is entitled to and will receive the hearty plaudits of the friends of scientific education for the wisdom and courage which they have displayed; and they should be prepared to sustain their act by every means at their command. The profession of New York State know by long experience that not a session of the legislature will pass without one or more attempts being made to let down the bars for the admission of individuals or classes; and our brethren in the Northwest can reap rewards by being forewarned in this regard. The splendid State Association in Iowa is now all-powerful, harmonious and enthusiastic, and can easily by careful cognizance of proposed pernicious legislation, effectually controvert it by united opposition. Three cheers for Iowa!

THE REVIEW tenders its readers the compliments of the season, and wishes them a greater degree of prosperity from all standpoints for the new year than they have enjoyed in the past, which has, however, been one of true progress along the best lines. Educational interests have been more satisfactory than ever in our history, associational usefulness and enthusiasm was never more acute, while the worth of the practitioner from a practical point of view has been more generally and generously recognized by owners of live-stock, whether it has been in consultation upon sanitary questions or the restoration to health or alleviation from pain of a faithful animal servant or companion.

FIGHTING RINDERPEST.—Successful results are said to have been obtained recently with antirinderpest serum in the Muktesar Laboratory near Naini Tal. During the past twelve months enough serum to inoculate 300,000 cattle has been produced there, and more than a hundred veterinary assistants from all parts of India have been trained in applying it. The serum has given satisfactory results wherever it has been tried, and veterinary officers are beginning to find that prejudice against its use is disappearing.—(*Chem. and Drug.*)

ORIGINAL ARTICLES.

HAEMORRHAGIC SEPTICAEMIA.

By M. H. Reynolds, M. D., V. M., University of Minnesota, St. Anthony Park, Minn.

(*Concluded from page 837.*)

PROVISIONAL REPORT ON BACTERIOLOGICAL EXAMINATION OF HÆMORRHAGIC SEPTICÆMIA AT STATE EXPERIMENT STATION, ST. ANTHONY PARK, JUNE 9TH, 1902.

Specimens were collected from cows No. 1, 2, 3, on June 9th, and from cow No. 4 on June 12th, at autopsies conducted by Drs. Reynolds and Brimhall. *Bacillus bovisepticus* (hæmorrhagic septicæmia) was obtained in pure culture from the liver and spleen of cow No. 4, and was found present also in the lung and meninges of cow No. 1, and in the pharyngeal gland and meninges of cow No. 2, though in these latter two animals the bacillus was mixed with other organisms such as colon bacillus. This was probably due to the fact that the autopsies were not made until several hours after death.

With the cultures obtained from the meninges of cow No. 1, rabbit No. 569 was inoculated intravenously, June 13th, and died on June 14th (*i. e.* in less than 24 hours). From the rabbit the bacillus was obtained in pure culture from the heart's blood.

From cow No. 3 this bacillus was not isolated, probably owing to the very great infection with other microörganisms which had developed after the death of the cow. Further rabbit inoculations will be made. In the meantime, from three of the four sources, the microörganism has been obtained and from one source, cow No. 1, the organism has been shown to be virulent. The strains of bacilli from the other two cows have been inoculated into animals, but as yet no results have been obtained.

Yours truly, F. F. Wesbrook.

UNIVERSITY FARM CASE NOTES.

Iris.—June 8, 3-5 P. M., she was slightly stupid, in standing position, apparently strong and breathing easily. This cow drank naturally and did not show anything unusual except a slight listlessness. Died at 6.15 P. M. Iris' death was very unexpected until within a few minutes before it occurred. (See Fig. 7.)

Vye cow.—June 8, 11 A. M., quiet, apparently comfortable.

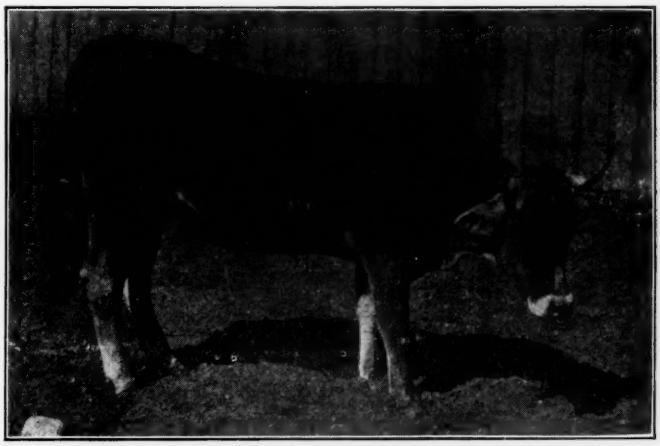


FIG. 7.—Iris. University Farm outbreak. An apparently easy attitude, slightly stupid. A moment before, she was drinking and switching flies unconcernedly. The photograph shows her condition at 5 P. M.; at 6.15 P. M. she was dead.

Could walk fairly well, not supposed to be in any serious danger. This cow had a slight convulsion at 9 A. M.

1-3 P. M., quiet, and lying in a comfortable position.

June 9, the cow was found dead early in the morning in a back stable, having forced her way through an intervening door, which had been closed the night before. She had evidently shown great activity before death, although she was very quiet the evening before and not considered to be in immediate danger.

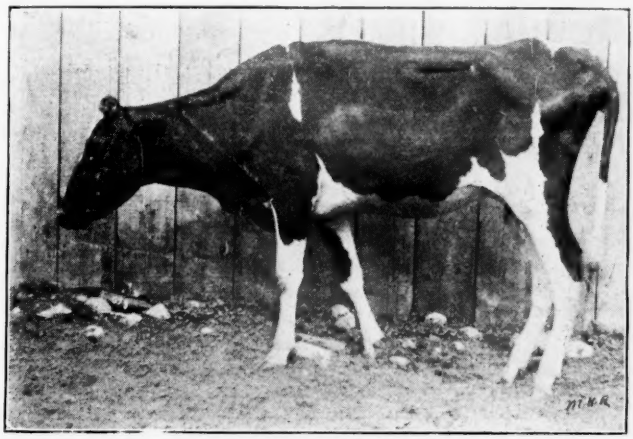


FIG. 8.—Lou. University Farm outbreak, meningeal type; case in first stage, cow stupid.

Lou.—June 8, 3-5 P. M., standing most of the time, walked fairly well but seemed very weak. Died about 6.15 P. M. (See Fig. 8.)

Sweet Clover.—June 8, died about 9 P. M., after an hour or more of intense nervous and physical activity. She was champing jaws spasmodically and had convulsions of face and neck muscles. The earlier history of this case is unknown. This heifer was taken sick suddenly in a pasture to which the other cases had not had access and was the only case to develop in this pasture.

Alzanka.—June 8, quiet at 10-12 A. M. Neck around to the side as in parturient paresis. Could walk but was down most of the time.

3-5 P. M., down all the time, neck in the flank, quiet.

9 P. M., down with neck in right flank most of the time; quiet, stupid, with stertorous breathing.

June 9, 9 A. M., about the same as the previous night.

	11 A. M.,	temperature	100.8
	2.30 P. M.	"	101.8
	6.45 P. M.	"	102.8
	9.40 P. M.	"	101.8
June 10,	7 A. M.	"	100.8

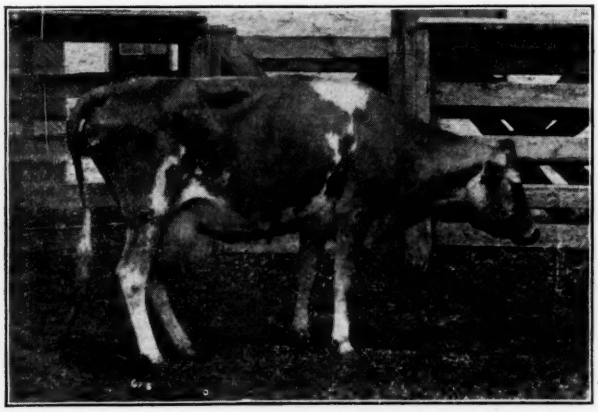


FIG. 9.—Dell. University Farm outbreak, meningeal type; case in first stage, animal stupid.

This cow died at 10 P. M. Little apparent change in condition until near the end.

Dell.—June 8, 11 A. M., quiet, down most of the time.

At 3 P. M., lying in the yard, stupid, neck bent to one side. She was quiet, although the appearance of her eyes and condition of the cervical and facial muscles suggested a tension of the nervous system. Breathing at this time was stertorous.

10 P. M., temperature 101.5. Down, quiet but showing the usual symptoms in the face and neck. Loss of skin sensation, etc.

June 9, 9 A. M., apparently little change since last night.

2.30 P. M., about the same.

6.45 P. M., temperature 101.6.

9.50 P. M. " 103.4.

This cow died at about 4 A. M. June 10th.

Countess.—June 8, 11 A. M. Respiration stertorous recumbent most of the time, but could walk.

2.30 P. M., pupil of right eye contracted, left dilated.

3-5 P. M., this cow was down most of the time, respiration stertorous. Could walk, but the gait was quite irregular.

June 9, 9 A. M., cow had died during the night and was found out doors having in some way forced her way through or

FIG 10.—Dell. University Farm outbreak. The same animal as figure 9. A slightly later stage of the disease.

under a very heavy sliding door. Evidently there had been intense activity before death.

Euroma.—This was a Jersey cow, giving normally at this time about 14 pounds of milk, testing 5 to 6 per cent. butter fat. She gave on the evening of June 6, 5.1 pounds of milk, testing 6.2 per cent.; on the morning of the 7th, 2.1 pounds of milk, 5.2 per cent. butter fat.

On the morning of the 7th the head was carried to the left; the left ear was more upright than the other and held back in a peculiar position, and the animal seemed stupid.

June 8, 9 P. M., patient was standing grating her teeth and showing very marked spasms of the cervical muscles. The head was now turned around to the right and a portion of the right ear cold. She was not seen during the interval but supposed to be quiet and easy from what was learned of the attendant.

At 9.05 P. M., this cow was found back of a spray pump in the runway, very stupid, weak and with poor circulation. She was in standing position and grating her teeth. Spasms of the cervical muscles were marked. This cow was apparently in very serious condition.

At 10 P. M., there was great nervous excitement, the patient tearing around in a large room with short intervals of comparative quiet. Chewing motion, discharge of frothy saliva and convulsions of the neck and face muscles were continuous.

10. P. M., temperature 104.
10.30 P. M. " 105.
11.20 P. M. " 107.6.
Died at 11.40 P. M.

Note the very rapid rise of temperature.

Trudie Lee.—This cow gave no milk on the evening of June 10. June 11, 10 A. M., temperature 102; 1 P. M., temperature 101.8.

This cow was apparently almost normal on June 11, but showed the usual peculiar expression of eyes and head. She was grating the teeth slightly; salivation was increased and skin sensation good, at least during forenoon; patient slightly dull.

June 11, 1 P. M., down, when made to get up she stretched and seemed to feel first-rate. The nose was moist.

6 P. M., temperature 101.6; neck at right side, hair rough; feet raised several times in a crampy way, nose moist.

9 P. M., temperature 102.6, wild expression in the eyes, and nose dry. She died during the night.

Examination Post-mortem.—Only this one autopsy record of the University Farm cases will be given here. The findings in all cases were very similar and Trudie Lee may be taken as a type.

Trudie Lee, a Jersey cow, in good condition, died early in the morning of June 12. The carcass was in fairly good condition.

There were hæmorrhages in several places on superficial parts, under scapulæ, etc. There were very marked hæmorrhages involving meninges of the medulla, but scarcely showing at all on the brain surface or in its substance. Multiple hæmorrhages were thickly scattered over omentum and mesentery, and there were several on the surface of the liver. The heart showed many small hæmorrhages on the surface; the right auricle being very markedly hæmorrhagic. On the costal pleura there were numerous hæmorrhages of varying sizes. The lungs were deeply congested in places, especially in the region of the internal faces.

Lesions were all of marked hæmorrhagic character. There were two marked hæmorrhages between peritoneal and muscular coats of the uterus, which contained a normal five or six months fœtus.

Comments on Case Notes.

A survey of the foregoing case notes brings to light several interesting points. In the first place it will be noted that the temperatures were normal or subnormal rather than high, until a very short time before death, when the temperature rose very rapidly, notably in the case of Euroma. The evidence on this point is not altogether satisfactory, for in so many of the cases circumstances were such that temperatures could not well be taken during the last hour or so. In the Caffrey cases, where it

was possible to follow the cases entirely through its course from the onset until the fatal termination, the temperatures were normal or subnormal throughout.

In the outbreak which occurred among cattle at the University Experiment Farm the disturbances of the nervous system were particularly marked, so much so that the diagnosis based on both ante and post-mortem symptoms was unanimously considered to be a cerebro-spinal meningitis.

Several of these cases at certain stages very closely resembled typical cases of parturient paresis. (See letter from Dr. Hela, under "Caffrey Outbreak.") It should perhaps be noted that we had one cow taken sick with all the clinical symptoms of this latter disease, the symptoms appearing about 36 hours after parturition. (See "A Supposed Milk Fever Case.") The outbreak previously described as appearing among the dairy cattle belonging to the University Experiment Farm appeared on June 8, or about 11 days after this supposed milk fever case. No examination post-mortem was made of the latter, but in view of the fact that several of the cases which appeared in the general outbreak among our cattle very closely resembled milk fever in all points except in the history of recent parturition, grave doubt has arisen in the mind of the writer whether the supposed milk fever case was not a cerebro-spinal type of hæmorrhagic septicæmia instead of parturient paresis. The writer can well understand that a suspicion as to the accuracy of the diagnosis in an apparently typical case of parturient paresis may appear somewhat peculiar, to say the least, but to those of us who saw the cases among our University Farm cattle it does not seem peculiar at all. There does not appear any reason why this peculiar type of hæmorrhagic septicæmia could not appear thirty-six hours after parturition as well as at any other period. If we consider the sudden checking of milk flow, the constipation, the posterior paralysis, the lack of skin sensation, the recumbent position, with the head in the flank much of the time, the reason for doubting an apparently clear diagnosis may be easily understood.

A peculiar fact which appeared in connection with our University Farm cases was noticed by the attendants, and every one who saw the case, viz., that the animals nearly all died in what they called the "inverse ratio" *i. e.*, the cases which were apparently most seriously sick early in their histories were the cases which lived the longest, whereas the apparently milder cases died very quickly and very unexpectedly. Those cases which were apparently most seriously sick were the ones which lived until the last ones of the outbreak. The Vye cow is an instance in point. If the brief convulsion on the morning of June 8th had not been seen, this cow would not ordinarily have been considered sick at all beyond a very slight diarrhœa.

Iris was standing in the yard drinking, switching flies, showing nothing whatever apparently wrong with her except slight listlessness as seen in the accompanying photograph, and yet she died very suddenly and unexpectedly, without developing serious symptoms until a very short time before death.

In none of the cases witnessed by the writer has there been a rise of temperature, nor any tenderness on pressure over the spinal column more than elsewhere over the body, but quite a number have shown a hypersensitive condition of the skin in general. None of the cases seen by the writer presented unnatural heat at the base of the horns, or throat paralysis. It will be seen that although the State Farm outbreak was unquestionably a cerebro-spinal meningitis as proven by antemortem and post-mortem symptoms, yet it differed in very many particulars from cerebro-spinal meningitis as it appears in the human family.

A CASE OF OVINE HÆMORRHAGIC SEPTICÆMIA.

A show sheep in fine condition, ten months old, which arrived from Canada about the middle of February, was noticed sick February 17th, and died on the 18th. This animal was examined on the 17th about 4 P. M. The patient showed peculiar breathing, there being two or three short, moderately full respirations, and then a considerable interval. Respirations were not very rapid, and quite unlike an ordinary pneumonia.

Neither nasal discharge nor cough was noticed. Temperature and pulse were not taken. This was supposed to be a case of common catarrh and not thought serious. The animal died very unexpectedly.

Autopsy.—Several bright, sharply defined hæmorrhagic areas were found on the inner surface of the skin, after removing an excessive amount of fat. There were no hæmorrhages on the superficial muscles. The small intestines were evenly and generally congested, but this was comparatively slight. No hæmorrhage upon any portion of the alimentary tract. Lungs were as if they had been taken from a hog during an outbreak of hog cholera and swine plague, and were typical of the latter disease. The collapsed areas amounted to probably one-third of the entire lung substance. The heart showed extensive hæmorrhagic infiltrations, especially the auricles. Report from Dr. Wesbrook, Director of the Bacteriological Laboratory of the State Board of Health, was to the effect that pure cultures of *Bacillus bovisepticus* were recovered.

SUPPOSED MILK FEVER CASE.

A Jersey cow, of high dairy type, belonging to the University Experimental Farm, calved May 28. She was noticed sick on May 29, and when seen by the writer had lost voluntary control of the limbs; skin sensation was poor over most of the body surface. She was rather quiet with the head in the flank, and the usual retention of fæces and urine. Iodide of potassium, 10 grammes was dissolved in a quart of warm water at 10.30 A. M., May 29. One-fourth of this was injected into each gland. This treatment apparently had very little effect and the dose was repeated at 9 A. M., May 30. This second dose was practically without effect and the cow died some time during the same afternoon. We did not expect the cow to die at this time and she was not seen during the last few hours. In view of the symptoms which were seen in one general outbreak of hæmorrhagic septicæmia where several cases very closely simulated milk fever, the suggestion may not appear unreasonable that this case was either not a case of milk fever or else, if you

please, a case of milk fever caused by the same germ which was apparently responsible for the development of the other cases, which appeared later (see University Farm Outbreak).

SUSPECTED OUTBREAKS NOT UNDER THE PERSONAL OBSERVATION OF THE WRITER.

Mr. Wm. L. Hoover, Faribault, called at my office on Dec. 29 and said he had 17 head of cattle coming two years of age and had lost four; the first case about Dec. 1, and the last one about Dec. 27. The first three died within a week, leaving quite an interval before the fourth one died on Dec. 27. All of these animals died very suddenly. The owner noticed on skinning the animals hæmorrhagic areas on the body surface, particularly on the neck, and stated that a similar condition may

FIG. 11.—Diaphragm Showing Typical Hæmorrhages.

have been present in every case, but it was not noticed. He did not know whether similar areas had appeared upon the viscera or not.

Mr. E. G. Stark came to see me on Dec. 29, concerning the loss of cattle in his neighborhood. He reported that Mr. Isaac Carter had lost three cattle in about a week—out of a total of 12 head. This occurred just before Christmas. The first one died in about six hours after having been noticed sick. The two others also died very suddenly. He could give no information concerning the post-mortem conditions, but stated that the cattle had been fed on shocked corn and kept in the stable and yard.

Later I received a letter from Mr. Stark, dated Jan. 28, giv-

ing more definite information concerning the losses among Mr. Carter's cattle. He states that the first one died about Dec. 10. It had been found sick in the morning and died about 3.30 P. M. The second died about ten days later. On coming up a hill on its return the animal stumbled and fell over dead, and as he states, "it did not even kick after falling." This was a two-year-old steer. The third animal died about four days later. This one was taken sick at about eleven in the morning and lived until four o'clock the next morning, suffering very severely, at least so the owner supposed. This probably means that the animal did considerable struggling and possibly groaning while down. The fourth animal was a young cow, and as he expressed it, "she also died hard." About Jan. 5 or 6, two animals were found dead in the barn in the morning and the next morning two more animals were found dead. *None of these four last animals had been noticed sick.* At the time of this outbreak Mr. Carter had sixteen head of cattle and lost eight. The owner informed Mr. Stark that those cases which had lived long enough to give an opportunity for observations had seemed very tender to the touch, particularly over the spinal column and near the base of the brain. The heads were drawn as far back as possible and the eyes "rolled up." The animals that died had been fed corn on the stalk.

One interesting bit of information in connection with this outbreak was to the effect that the owner had these eight animals drawn out just behind his stacks within a few yards of the barnyard after having removed the skin, and that no further cases appeared. One of the neighbors who skinned most of these animals for Mr. Carter had a nice lot of cattle, but his cattle received no infection.

Mr. Peter Nelson had lost eight and killed two out of a total of seventeen head. The first case appeared early in November. The deaths with the exception of two, came very close together. These two died a week or so later. No careful examination post-mortem was made, and no further information was obtainable from Mr. Nelson.

Mr. Jens Sorenson, of Monticello, wrote me on December 7 concerning some disease among a neighbor's cattle. His letter was to the effect that a certain neighbor had lost eight cattle, and other neighbors had lost cattle from this disease. Some of these cattle which the owners had supposed to be in perfect health had dropped suddenly and died practically without struggling. Others have lived a few hours after being taken sick. The neighbors had noticed that those which lived for a few hours appeared very sensitive along the spinal column. This is very meagre information of course.

Richard Anderson, Belle Plaine, had eleven head and lost four. The first one died about November 13th, the last one November 29th. None were sick at the time the information was received. The period of sickness was given as approximately three hours, but varied. The owner stated that the head was drawn backward after the animals went down; dark red areas were noticed under the skin, but no spots were seen on the internal organs. His cattle were confined to the yard and usually given dry feed, including shocked corn fodder. Mr. Anderson noticed also the peculiar grunting expiration, usual sensitiveness of the body surface under pressure, and that the animals were disinclined to walk around, being apparently sore. He described the typical condition of the intestines and rectal mucous membrane.

DIAGNOSIS.

It is very evident, in view of the widely different types exhibited in different outbreaks, the very brief period of illness and the similarity between this and certain other diseases, that a positive ante-mortem diagnosis is necessarily out of the question in many cases and uncertain in any case, except with the aid of previous autopsy and clear histories in previous cases of a given outbreak. The diagnosis must depend on the history, what little can be learned of the ante-mortem symptoms, and the results of examinations post-mortem. In all cases which came under the observation of the writer, there were opportuni-

A COMPARATIVE STUDY.—HÆMORRHAGIC SEPTICÆMIA, ANTHRAX, SYMPTOMATIC ANTHRAX AND CEREBRO-SPINAL MENINGITIS.

	Hæmorrhagic septicæmia.	Anthrax.	Symptomatic anthrax.	Cerebro-spinal meningitis.	Remarks.
Aet. organism	Bacillus bovisepticus	Bacillus anthracis.	Bacillus chauvœi.	Diplococ. intercellularis. Diplococcus pneumoniæ.	
Infection	Method, unknown.*	Ingestion, inhalation and inoculation.	Inoculation.	Uncertain, probably ingestion, possibly inhalation	*In some cases apparently by inoculation.
Extent of spread	Enzoötic.	*Epizoötic.*	Enzoötic.	Enzoötic.	
How spread	Unknown.	Movement of any infec ed substance.*	Carcasses, stagnant water, fæces, food, etc.	Uncertain ; probably food stuffs in many cases.	*Including blood and discharges. Insects active agents of spread.
Season favoring	Indifferent.	Wet spring, then dry, hot summer	Most common in summer and fall.	No satisfactory information.	
Susceptible animals	Cattle, sheep, horses, var's wild ani'ls.*	Nearly all domestic many wild anim'ls†	Young cattle, sheep goat.‡	Cattle, horses, sheep, goat and dog.	*Possibly swine. †Pig but slightly susceptible. ‡Rare in cattle over 2 years old.
Labo'y animal inoc'n	Generally fatal	Generally fatal.	*Rabbit and mouse resist.*	*D. intercel*, resisted by G. pig and rabbit. *D. pneumoniæ* gen. fatal	
SYMPTOMS:					
Onset	Sudden except in rare chronic type	Sudden.	Sudden.	Usually sudden.	
Local lesions	Swellings slight or ab sent.	Swell'gs may be present; absent in acute.*	Swellings usually *present* and *emphysematous.*	Absent.	*Not emphysematous
Urine	Sometimes blood stained	Frequently blood stained or dark.	Sometimes blood stained or dark.	*Normal appearance.*	
Fæces	Often blood stained when live sev'l days.	Frequently blood stained or coated.	Sometimes blood stained		
Temperature	Frequently normal or sub-normal.*	Very high early.	Very high early, may fall later.	Normal.	*Rising in some cases rapidly just before death.
MORBID ANATOMY:					
Subcutaneous gas	Absent at death.	Absent at death; but decomposition rapid	*Present before death.*	Absent.	
Blood	Normal.	Dark, *feeble coag.* No red'ng on exposure.	From gen. circul'n normal. Reddens on exp.*	Normal.	*From tumor, dark frothy and fœtid
Hæmorrhages	Usually present.*	Very general. Nearly all organs subject.	Not general; but may occur in various tissues.	Reported present; but diagnosis questioned.	*May vary greatly in size and inten'y; but well defined.
Serous cavities	Walls frequently show small hæmorrhages	Reddish serum usually present.	Reddish serum may be present.*	May contain reddish or lemon yellow serum.	*Especially in the abdominal cavity.
Spleen	Normal, except superficial hæmorrhages	*Enlarged, dark, soft.*	Normal.	Normal.	
Mortality	80-90%.	80-100%.	80-100%.	80-90%.	

ties for such examinations because all cases terminated fatally.

Differential Diagnosis.—So far as facts occur to the writer at present, the differential diagnosis comes between anthrax, symptomatic anthrax, corn stalk disease, specific cerebro-spinal meningitis. There is no question in the writer's mind but that hæmorrhagic septicæmia has in the past been very frequently diagnosed as other diseases, particularly as anthrax and symptomatic anthrax. The writer suspects that very many cases of so-called corn stalk disease have been nothing more or less than the disease now under discussion.

The differential diagnosis is perhaps shown as clearly in the preceding table as could be given in any other way.

The ante-mortem differential diagnosis, exclusive of laboratory findings, between hæmorrhagic septicæmia and anthrax is to be made upon the appearance of the blood, the history of spread, the extent of spread and temperature.

The ante-mortem differential diagnosis, exclusive of laboratory findings, between hæmorrhagic septicæmia and symptomatic anthrax must evidently be based upon the history of the cases, especially the ages af animals affected, temperature, local superficial lesions, and examination of blood taken from the tumor in case such lesion is present.

A discussoin of differential ante-mortem diagnosis, exclusive of laboratory findings, between hæmorrhagic septicæmia and specific cerebro-spinal meningitis of cattle is apparently not justified by existing reliable information concerning these two diseases. Our Minnesota outbreaks of infectious cerebro-spinal meningitis among cattle have been of a rapidly fatal type and showing so far as our present knowledge of the subject is concerned no clinical evidence upon which a differential ante-mortem diagnosis could be made. In other words for our ante-mortem diagnosis between these two diseases we are at present dependent almost wholly upon the laboratory.

It will be noted in studying the table that in their histories and general clinical evidences these two diseases run very closely parallel but may be very easily distinguished at autopsy

when the typical hæmorrhagic lesions appear in the one and do not appear in the other.

The post-mortem differential diagnosis between hæmorrhagic septicæmia and anthrax rests upon the appearance of the blood and condition of the spleen. In so far as general hæmorrhagic conditions are concerned; hæmorrhages involving the serous cavities; results of inoculation with the laboratory animals; and hæmorrhages involving the heart or its membranes and also in mortality the diseases are very closely parallel indeed.

The post-mortem differential diagnosis between hæmorrhagic septicæmia and symptomatic anthrax lies: in the appearance of multiple localized hæmorrhagic areas in the former, but not in the latter; and emphysematous tumors involving the subcutaneous ærolar and muscular tissues, especially of the upper portions of the limbs, which are frequently present in the latter but not in the former.

The post-mortem differential diagnosis between hæmorrhagic septicæmia and cerebro-spinal meningitis, except in the cerebro-spinal type of the former, rests upon the involvement of the brain and cord, and their membranes, and upon the presence or absence of the typical hæmorrhages elsewhere. Localized hæmorrhages elsewhere in the one case or their absence in the other, should clear up the diagnosis as positively as would be possible without laboratory work. The differential diagnosis, so far as laboratory work is concerned is apparently not particularly difficult, provided the work can be done under favorable conditions.

It is out of the question to discuss intelligently the differential diagnosis either ante or post-mortem between hæmorrhagic septicæmia and corn stalk disease until we know something at least of what the latter is and have some definite information concerning it.

Treatment deserves no discussion, for, so far as our present information concerning the disease extends, it is a waste of time and medicine, although it is true that the two animals, Alzanka and Dell (University Experiment Farm outbreak), received full

doses of nerve sedatives, and lived very much longer than other cases, but terminated in death just the same.

FIG. 12.—Swine Plague Hæmorrhages. These hæmorrhages resemble very closely the hæmorrhages of bovine hæmorrhagic septicæmia. It is interesting to note that the specific germ or germs of swine plague and hæmorrhagic septicæmia are not distinguishable by any known laboratory procedure.

GENERAL CONCLUSIONS.

For the present, at least, we must consider the term "hæmorrhagic septicæmia" as quite inclusive, a sort of generic name which must cover a multitude of widely varying types of disease, in all of which the specific microörganism *B. bovi-septicus* is found, and so far as our present information is concerned we are apparently justified in considering this germ as the specific cause of the widely varying types. It is also safe to assume that it is not by any means a new disease, the only new feature about it being probably its definite diagnosis by Dr. Wilson of the Laboratory of the Minnesota State Board of Health. Very many outbreaks of this disease have unquestionably been diagnosed as corn-stalk disease, black leg, and anthrax. Those of us who have been so fortunate, or unfortunate perhaps, as to have had personal experience with the disease in Minnesota have had occasion to smile at the clearly described typical outbreaks of hæmorrhagic septicæmia appearing in our veterinary journals under other names.

AT the recent Orange Horse Show (Orange, N. J.), Dr. T. Earle Budd's chestnut mare "Anne Morton" won second prize in class 23 for single roadsters over 15.1 hands. Both in the quality of horses and the number of exhibits the Orange Horse Show this year is said to have eclipsed any of its predecessors.

THE PATHOLOGY OF INFECTION.

ABSTRACT OF A PRESIDENTIAL ADDRESS BY SIR J. BURDEN SANDERSON, BART., OF ENGLAND.

Condensed from the *Lancet* by PROF JAMES L. ROBERTSON, and read before the December Meeting of the Veterinary Medical Association of New York County.

Pathology seeks to investigate the causes of things--the cellular pathology of to-day, for the encounter of disease-producing agents with the living organism presents to us problems which are as truly problems of cellular pathology as are those relating to the processes of inflammation, tubercle or cancer.

The subject is the pathology of infection. Try to translate into language which would have been intelligible to the pathological student of twenty years ago, the technical language which is unavoidable in dealing with notions which have, so to speak, sprung fresh from the laboratory and have not yet had time to clothe themselves in plain English.

Lister had taught us at the end of the sixties the etiology of traumatic inflammation and of the diseases which are associated with it. From Chauveau we had learned that in the liquid contagia of many diseases communicable by inoculation —glanders, sheep-pox, small-pox—the morbific agent could be separated from the liquid in which it was suspended by mechanical means, such as filtration or subsidence, and it had been inferred from this that all such morbific agents were particulate. Villemin had shown that tuberculosis could be communicated with certainty by inoculation. Several years later the specific nature of tubercle was obtained by the discovery of Salomonsen, that if a minimal quantity of tuberculous material is introduced into the anterior chamber of the eye of a rabbit no inflammatory reaction follows, but after an incubation period of two or three weeks tuberculous nodules appear on the iris—the process eventuating in general tuberculosis.

At this time Koch was perfecting that great discovery which was the foundation of the bacteriological method—the discovery that the bacillus of anthrax could be cultivated in success-

ive generations outside the body, and that these generations retained the power of communicating the disease for an unlimited period.

The next important step in the investigation of the process of infection was the discovery that in certain animals the liquor sanguinis is possessed of alexeteric (*alexo*—to "ward off") properties, by virtue of which it may contribute to the defense of the organism and that in the animals in which the power of resisting specific infection has been acquired by immunization. This power can be transmitted to other individuals by the serum.

The results which have been gained present to the student who desires to bring them into intelligible relation with each other, difficulties which are greater than any which he has to encounter in other branches of pathology.

A few years ago, the contest seemed to be between infected organism and infecting microbe. Now we have also to do with toxins and antitoxins. In the language of a century ago, a transition has taken place from solidism to humeralism, and even the old words have been revived.

To the microscopical methods we have to add chemical ones. If we had to do with substances of known constitution, which could be recognized by their chemical reactions, it might be otherwise, but as yet we are far removed from this knowledge. Now there are two points relating to infection about which all are agreed. One of these is that when a contagium enters the human or animal body, its encounter with the living organism is of a nature of a struggle between two opposing tendencies. We may accept this notion of reciprocal counteraction or antagonism as fundamental, and allow it free scope in our speculations as to the nature of infection. There is one biological law to which there is no exception—the law that in the living organism every part, every organ, works together with the rest for the maintenance and efficiency of the whole, and consequently for the counteraction of whatever is hostile to that end.

The liability to infection which this fact implies must in accordance with the law of adaptation be associated with the power of counteracting it.

The old notion that every bane has its antidote is so far true that every injurious substance which is capable of being assimilated (in the physiological sense) by the living cell, is also capable of exciting in it an abnormal reaction antagonistic to the first.

We have long recognized this power of reaction in the cells of the animal body, but Dr. Walker by his previous studies on the bacillus of typhoid fever, and still more by the experiments published only the other day, has given reason for believing that it is also possessed by the bacillus itself. He has shown that when the bacillus of typhoid fever is grown in a bacteriolytic medium, those bacilli which escape dissolution acquire a higher degree of virulence. In other words, the anti-bacterial reaction of the medium excites in the bacilli which evoked it an anti-antibacterial (*i. e.*, a pro-bacterial) reaction, which is, of course, equivalent to an increase of virulence.

A second point, about which there is also complete agreement, is that of *specificity*. The discovery of the specific cause of tubercle was anticipated and the microörganism itself sought for.

But the most striking result of all has been the discovery of the close analogy between specificity of man and of the higher animals and that of their diseases.

The analogy may be expressed by saying that species in animals and species in infective diseases have this in common—that they can be distinguished by characteristic peculiarities in the liquid part of the circulating blood, characteristics which might be called chemical, were it not that, although they belong not to cells, but to their fluid environment, they are physiological or pathological and not such as the chemist could take cognizance of.

Let us pass on to the discussion of the two forms in which the infective process presents itself—infection by toxin and infection by bacteria.

We should, as far as possible, confine our attention to what happens in the tissues and structures of the infected organism when attacked by the infecting toxin or bacterium, as the case may be.

Of the first kind of infection diphtheria is the typical instance. Its toxic action can be measured with assured accuracy by determining how much is just enough to kill a given test animal in a given time.

A certain quantity of horse serum prepared by the now familiar method of immunization is proved by experience to counteract that action—*i. e.*, in technical language, to neutralize the *minimal lethal dose.*

This experiment, which has been repeated thousands of times, suggests the existence in toxin and serum of two bodies which enter into chemical combination, but when we seek for the evidence that this is so, we encounter insuperable difficulties.

If the combination of the two antagonistic substances were a chemical one, it would be indicated by chemical reaction, capable of being expressed in chemical language.

In judging of chemical neutralization, we have recourse to a chemical test or indicator; in the present instance our indicator is not chemical but pathological. The reagent used is not a chemical reagent in a test tube, but a living guinea-pig in a cage. The indicator, even if a little less exact, is quite as certain—we are able to observe the pathological effects, but of the substance which produces them we have as yet no exact knowledge.

Later we shall see that certain concomitant phenomena of infection are already accessible to chemico-physical investigation, but this cannot yet be said to be the case as regards the essential process of infection and counter-infection.

We can best judge of this by considering what we know as to the essential nature of the action of the toxin of diphtheria.

The quality which stands first is lethality. This we measure in terms of the M. L. D. unit. It is a process during which the guinea-pig passes more or less gradually from potential to actual death. But lethality is not all.

All toxins in moderate doses do something else. Side by side with the lethal process there is another process, the effects of which tend in the opposite direction. Its nature can be best understood by comparing it to what in physiology is called stimulation. For, just as the introduction of a saped substance into the mouth evokes a corresponding specific sensation, so, when a toxin enters the organism it calls forth an equally specific reaction or response.

It is scarcely needful to point out that this response must have its seat in the living organism or the cells of which it is constituted, and, like other responses to stimulation, there is no constant relation between the intensity of the response and that of its exciting cause.

It is still more important to notice that, although its effects extend not only to the living cells, but to the medium in which they live, the action itself is physiological or vital.

The two properties may be characterized. The lethal effect and that of inducing an antidotal or protective action are so different that it may seem superfluous to contrast them ; but their association in the process of infection suggests the question of the nature of the connection between them. That these two actions are wholly independent cannot be asserted, but there are many indications that they are not necessarily dependent on each other.

Let us refer to one or two experimental facts. If, after a lethal dose of toxin has been administered to a guinea-pig, a dose of antitoxin, slightly larger than that necessary to antagonize the toxin *in vitro*, is given immediately, the lethal effects are averted.

But if the antidote is delayed, as in the experiments of Donitz, the quantity of antitoxin required to prevent death must be correspondingly increased, until eventually no amount of it is adequate. The lethal process, therefore, is one of which you can measure the duration in minutes, whereas the reaction is a process of protracted development. It would be difficult to regard them both as direct effects of the same cause.

The complete separateness of the one process from the other is still more strikingly proved by a remarkable series of experiments also relating to tetanus-toxin, made a year ago by Dr. Ritchie. He found that by subjecting tetanus-toxin to the action of very dilute hydrochloric acid for a limited period, it is possible so to modify active tetanus-toxin as to deprive it of its lethality, while retaining its power of exciting antagonistic action. He was thus able to use it at once in much larger dose than would otherwise have been possible, and consequently to bring up his animals very rapidly to such a degree of immunity that (in one series of experiments) they tolerated more than a hundred times the minimal lethal dose.

This very important result seems to make it impossible to question the duality of the two actions of toxin—the lethal and the reactional—but it may still be asked what the nature of the reaction is?

It would be rash to attempt a complete answer to this question, but we have in experiments, such as those of Donitz, an indication which can scarcely be mistaken.

If when an animal is moribund, when the death process is going on and would certainly very shortly end, it can be arrested by an antidote, it is difficult to describe the action of the antidote, otherwise than by saying it is anti-lethal. As to the intimate nature of the antagonism, we are precluded from discussion by the circumstance that the actions which antagonize each other are only known as actions.

Lethality is a property which we cannot investigate *in vitro.*

The sum of what has been said as regards the infections that owe their origin to soluble toxins is that in every such process there are two actions, respectively lethal and reactional, which have their seat in living cells. The latter is not in itself protective, but is able to awaken an anti-lethal reaction in the cells which come under its influence.

You will observe that this statement embodies no theory of the nature of the process.

It aims at setting forth what happens in the simplest and most general terms.

Just as diphtheria and tetanus have served us for the exemplification of the process of infection by soluble toxins, so we may take cholera as an instance of infection by microbes.

Cholera is chosen for the reason that the fundamental experiments of Pfeiffer, which have led to so many important discoveries, related to the cholera-vibrio.

Among the earliest experiments in infective products the peritoneal cavity of the guinea-pig was used as constituting an admirable cultivation chamber, containing endothelial elements prone to proliferate and leucocytes prepared to incorporate whatever particles were presented to them.

The experiment just mentioned consists in this, that you introduce into the peritoneum cholera vibrios of mitigated virulence in less than lethal doses. The effect of the proceeding is that the guinea-pig becomes immune, the signs of which change are (1) that fresh vibrios in many times the lethal dose can be introduced without lethal results, (2) that the vibrios undergo what for the last ten years has been known as bacteriolysis, and (3) that the serum of the animal acquires bacteriolytic and protective properties.

Now, with reference to this bacteriolytic serum: it had already been discovered that it could be deprived of its bacteriolytic power by moderate warming.

But it was found that if the fluid so modified was introduced into the peritoneal cavity its lytic power was promptly restored—whence it was concluded that the constituents of the serum, which was destroyed by warming, was in some form or other produced by contact with living cells.

This contains in a nutshell what is essential in the process of bacterial infection and affords a data on which the distinction between the toxical and the bacterial form of the infective process can be founded.

In the case we first considered the encounter of the organism with a soluble toxin during an active immunization, noth-

ing more is required than that the two actions designated as severally *lethal* and *reactional* should be so opposed to each other that the effect of the former may be more or less balanced by the reaction due to the latter. When, as in natural infection, bacteria appear upon the scene as carriers of infection, it is necessary that (if I may be permitted to use teleological language) the infected organism should conform to the natural conditions of the infected organism.

Pfeiffer's experiment affords grounds for concluding that the power which the serum of animals immunized by his method possesses of dissolving the vibrios is due to a constituent similar in nature to that discovered several years before by Nuttall and Buchner and for the belief that in the bacteriolysis, which in Pfeiffer's experiment took place in the peritoneal cavity, two agents took part, the first of which is clearly a specific product of the collision between bacteria and living tissue, the other preëxisting and non-specific, a normal constituent of living cells.

These suggestions would not have assumed the definite form that we are now able to assign to them had it not been that about the same time another line of investigation was opened which promises to be as fruitful as that of Pfeiffer.

It was discovered that the toxic effects produced by *alien* blood disks (*i. e.*, blood disks from an animal of a different species) when introduced into the living body correspond in many remarkable particulars with those of morbific bacteria.

Burdet first demonstrated that the action of the hæmolytic serum thus obtained depends on two constituents, both of intracellular origin, one of which was specific and designated by him substance sensibilisatrice, the other non-specific, the analogues of the two, anti-bacterial products mentioned just now. The former is called *immunisine*, a word which expresses better than any other the specific property of preparing the blood disk or bacterium, as the case may be, for the lytic action of the second constituent, called by Burdet the *alexine*, and by Ehrlich the *complement*. This is called *lysine*.

The value of this discovery of Burdet consisted in this, that

it added clearness to the interpretation that had already been given of Pfeiffer's reaction, showing that the power which blood disks and bacteria have in common of resisting the solvent (lytic) action of blood and tissues is annulled by the specific protective action called into existence by the penetration into the infected human or animal organism of alien blood disks or bacteria, as the case may be.

Hæmolysis—the property of dissolving the colored blood corpuscles—is possessed by many bacterial products, and particularly by the toxin of tetanus, and that it was discovered by Ehrlich some years ago that the hæmolytic constituent of this toxin was different from the spastic, and that anti-lytic serum could be obtained by the ordinary process of immunization.

We have two kinds of poisons concerned in the production of specific diseases or of morbid states. Toxins which act on particular cells, as on the colored blood disks, toxins which act on the whole body.

PRECEPT AND PRACTICE.—A despatch from Berlin, dated Nov. 29, said: Distinguished members of the Society for the Prevention of Cruelty to Animals have been invited to a horse meat dinner by the *Fleicher Zeitung*, national organ of the German butchers, which says it desires to measure the sincerity of the Society in issuing its recent appeal to the public to eat more horse meat, so as to be merciful to animals unfit for work, which will be relieved of their sufferings if the consumption of horse meat is made more popular. The *Fleicher Zeitung* has not yet received any acceptances to the invitation cards, which were sent out Saturday, and are for December 16. The paper promises to put up as good a horse meat feast as an accomplished cook can produce, but the only material must be an aged, rheumatic beast, such as the Society desires to emancipate. No young colts will do.

"EYES FIRST, then hands, tongues last and least," is the well known advice often given to his pupils by the late Sir George Murray Humphrey, of Cambridge. "What a man sees he can be more or less sure of; what he feels with his hands may be a matter of doubt in dealing with diseases; what he hears may be altogether erroneous and misleading."

ETIOLOGY OF SHOE-BOIL.

By George J. Goubeaud, D. V. S., Brooklyn, N. Y.

A Paper read before the 12th Annual Meeting of the New York State Veterinary Medical Society, at Brooklyn, Sept. 9 and 10, 1902.

About two years ago I read an original paper before the New York County Veterinary Medical Association, treating upon the etiology of shoe-boils, or, as it is more properly termed, ulnar fibroma. It was prepared after several years of study, thought, investigation and experiment. Not being easily discouraged by adverse criticism, I have continued investigating up to the present time.

It is with the earnest desire of, as it were, forcing the issue, that I lay this, to me, interesting subject before this Association, a society composed of the foremost thinkers and advanced veterinarians of the country. The evening I read the paper before the N. Y. C. V. M. A. I did not possess as much as one friend, or one who believed in my assertions. In the discussion that followed I was plied with more questions than ten quick thinkers and rapid talkers could answer. Every one opposed me, and I left that meeting more determined than ever that I was right, because no one advanced a common-sense argument, made a reasonable assertion, or presented a rational view to upset my opinion. But since then I have received expressions of opinion which are in accordance with those which I hold. I lay this subject before the members of this Association to get an expression of opinion.

First, I wish to know if I am right, and if so then I have added my mite in advancing the interests of veterinary science; and if wrong, then I have simply been mistaken. I know that it is with no little difficulty some of us cast aside fixed ideas, cherished traditions, the teachings which we received, ideas formed and the impressions conveyed to us in our college days. It is with a certain amount of timidity that I present this paper, and I hope to have your indulgence. It is not the intention of the essayist to enter minutely into the pathology of this affec-

tion, nor describe the various lesions which the injury can produce (for such it primarily is), nor the complications which might arise. Neither its therapy, aside from prevention; the etiology alone will be considered.

The text-books, veterinary authorities, professional and lay writers, and those with whom I have conversed, claim that the shoe or the hoof is the offending agent. The larger number claim that the shoe causes this affection.

We will first take up the shoe as the first cause. The shoe causes shoe-boil, or it does not. The animal is either improperly shod, the heels of the shoe are too long, or they are purposely made long in order to correct some abnormal condition of the foot, or irregularity of the animal's gait.

The animal, while in the recumbent position, rests the elbow upon the heels of the shoe, thus injuring the skin and structure beneath, resulting in the characteristic tumor, or it drops heavily upon the ground whilst assuming the recumbent position. The heels of the shoe come in violent contact with the elbow, and in this manner the tumor is developed.

Now, as a rational conclusion, a result can exist not produced by a cause, or, how can a result take place which is produced by a cause that does not exist, and has no existence, or, in other words, how can a shoe cause shoe-boil when the horse did not wear shoes at the time of the development of the tumor? I have seen colts that never had a shoe upon their feet have these tumors, and I have seen horses without shoes turned loose in a box stall, and horses turned loose without shoes in a pasture lot, develop ulnar tumors. Others have observed the same occurrences and still it seems to make no difference, shoe or no shoe, these animals develop the affection.

I have seen horses wearing rubber pads have a swollen condition of the elbow present itself over night. In two instances the rubber pad was employed as a preventive measure, and still there were recurrences in both cases. I have seen horses wearing the half shoe develop tumor of the elbow. Now, how is it possible for the horse to develop these tumors caused

by the shoe, when the horse does not and did not wear shoes at the time of the occurrence of this affection?

Some claim that the foot causes this abnormality, and I will attempt to disprove the correctness of this assertion, although it will be a much more difficult task.

We will suppose that an animal does rest the elbow upon the foot; which part of the hoof I do not think makes any difference. We will suppose that a weight, say fifty pounds, rests upon the foot and the pressure of the same amount is placed upon the region of the elbow. Does it seem reasonable to suppose that an animal with a healthy brain will lie in that position? Does it seem reasonable to think that an animal will lie half an hour, or an hour, or perhaps longer, without causing extreme pain and discomfort? Does it seem reasonable to think that an animal will so lie upon the skin of the elbow and the structures beneath, which are very sensitive, and that it will injure them so severely without changing its position, and that the necessarily painful and uncomfortable position will not be changed before any damage has been done? As to the foot, will an animal stand that amount of pressure upon the hoof and its sensitive structure? I say, No.

Compress a horse's foot to about a twenty-five pound pressure and I can assure you that he will rebel against any such treatment the moment the test is applied, and it will not be necessary to wait one-half hour for the result; and, again, the usual result of pressure applied to sensitive parts is lowering of the vitality, destruction of the parts, pus formation and sloughs. I ask, how often does this happen? I can answer, very seldom.

For purpose of a better understanding of the subject under consideration, it will be necessary for me to divide ulnar hygromas into two classes—the acute and chronic. This will enable me to better explain the reason for their repeated occurrences, and their non-occurrence.

By the acute hygroma, I mean that condition of the elbow when it is first seen. Here we find an animal with a tumor of the elbow; it is hot, painful upon pressure, more or less œdema

of the skin, the animal has more or less lameness. His condition receives the proper treatment and in due time it disappears. There are no recurrences of the tumor. The severity of symptoms and size of the tumor depending upon the intensity of the cause producing it.

By the chronic form I mean when we have recurrences, or the cause producing this condition is not removed, and the result is an organized tumor. It is removed by surgical procedure, and still there are recurrences. I have seen cases that, in spite of treatment, developed into tumors even after so-called preventive measures were applied, and in order to describe why they developed it will be necessary for me to enter into a discussion upon pathology, which I have no intention of doing.

For the time being we will turn our attention to the cow. Cows have these tumors, but they are rare, which fact can be explained by the difference in the anatomical structure of this region. I have seen but one case in a cow, and this individual animal had a well-developed hygroma of two years standing. A common condition of the elbow, which can be seen in cattle as well as in horses, is a thickened appearance of the skin upon the outside of the ulnar region, sometimes of a scabby appearance, or a large ulcerated wound will be found with the edges much thickened. This condition in cattle is found in milch cows confined in narrow stalls. The animal, while lying in the recumbent position extends the foreleg on the side it lies. It inclines the body to one side, propped up by the side of the stall or partition. The animal in extending the foot will strike the floor of the stall sufficiently hard to injure the skin, but no further, and in time we have the appearance of this condition presenting itself which I have described above.

The reason for the rarity of a well-defined tumor being found upon the elbows of cattle is that the sternum comes in contact with the floor, and the elbows cannot come in touch with the ground. The only manner in which the affected part can become injured is while reclining sideways with the side braced up by the partition. And, again, horses and cattle do not

assume the standing position alike. I say that cows do not wear shoes, they cannot lie upon their feet, and still what causes this condition? Take the dog, especially those of the large variety. This is a common ailment, yet they wear no shoes. They cannot lie upon their feet; still what causes these tumors and their recurrence even after surgical removal?

Take the camel. Its position while recumbent is unlike that of the cow and the horse, but while attempting to rise, is entirely different from that of the horse, and somewhat similar to that of the cow. Elbows, knees, patellar region, os calcis and foot rest upon the ground, and in these parts there is a well-defined thickened condition of the skin, almost bordering upon the appearance of a tumor. I never saw a tumor in this animal, yet these animals wear no shoes, they cannot lie upon their feet. Now, what causes this thickened condition on the skin and the absence of a well-defined tumor?

The same can be said of the giraffe. The buffalo is similar to the cow, elk the same. The bear, fox, tiger and lion are like that of the dog. I saw a well-defined ulnar tumor in a lion, the property of a circus. These animals cannot lie upon their feet, they wear no shoes, and still what causes these growths?

Even man is not exempt from this affection. In this individual case, which I saw in a hospital, the tumor presented all the typical appearance of an ulnar fibroma caused in falling, by striking the elbow upon the ground. This man was an epileptic.

I have read reports in the different medical journals in reference to the tumors. The authorities agree that they are the result of an accident, such as falling, striking the elbow upon some solid body, etc.

And, again, take the horse with the chronic shoe-boil, and admitting that the elbow and foot can come together, the foot can be dislodged most readily with one finger, which I have done numbers of times and in the presence of witnesses. Now, if there was any pressure it would require more than the strength of one finger to dislodge the foot. Again, some claim that the motion of the animal's body causes friction, thus producing this affection.

When an animal assumes the recumbent position, it is with the object of resting its body, not to keep in motion; and secondary friction produces burning, chafing, scalding and removal of the hair and skin; not one of these conditions can be found to exist.

If an animal lies upon the right side, he appears to place the weight upon the elbow and foot. Now, examine the right side and you will find the side upon which most of the weight rests, and you will notice that the foot is either to the right or left of the elbow, and not resting one upon another, however much they may appear to be. And, again, take the vast majority of horses that do not possess this abnormality. They assume the recumbent position with the knees half flexed, the body inclined to one side. It is the normal position and a natural condition, not usually conducive to produce this affection. Take for example, an animal resting in the recumbent position upon the right side. Note its position. The left knee is flexed, the foot and elbow are in almost direct contact, the elbow apparently resting upon the heel of the foot. Now grasp the whole foot with the hand, and you will find that it is most readily and easily dislodged, showing that there is little or no weight placed one upon the other, and because this is the position which is the normal one for an animal to assume, we immediately accuse the shoe or the hoof as the offending agent, simply because we see the elbow and the foot in juxtaposition. We come to the conclusion that the hoof or shoe, or both, cause this abnormality.

It is true that we sometimes find the hoof either to the right or left of the elbow, but this is not common in horses. We will consider the side on which most of the weight rests, as, for example, that of the right side, where we find the hoof in this case, the left can be readily seen, but the right is hidden from view by the animal's sternum and pectoral region and also the bedding. Do we find the foot resting upon the elbow? I say, No. Here we find the foot in the axillary space, toe turned inward, with the elbow resting slightly upon the transverse surface of the fleshy portions of the heels. The weight upon the

parts is distributed in this manner: first to come in contact with the floor is sternum, anterior face of knee, anterior right lateral face of the shin-bone, phalanges, anterior left lateral face of the hoof. To dislodge the hoof upon this side and bring it forward or outward is a difficult task to do. It requires some strength. The cause of this is that the weight is not upon the hoof but upon the structures which I have just described.

A raw surface is very rarely seen upon the internal face of a shoe-boil. It is only seen upon the centre in the upper portion or upon the outside of the tumor.

The position which I have found animals assume, and which I firmly believe to be the cause of this affection, is that an animal will, while attempting to assume standing position, and which he will necessarily have to do, is to extend the foot and flex the knee, thus forming an arch with the foot and elbow resting upon the ground. While attempting to assume the standing position he strikes his elbow forcibly upon the floor or ground, thus producing various lesions. In the course of my investigations I have seen this occur twice, the animals evincing symptoms of acute pain and lameness the following morning.

I also noticed that those which were predisposed to this affection were animals that assumed this position when recumbent, and they slept with the head between the knees and the nose resting upon the floor. They usually rested with one side of the body close to the side of the stall. It will often occur when the animal becomes frightened and arises suddenly. It will then strike its elbow upon the floor in a forcible manner, thus injuring it. I know of one instance where this occurred. I removed a splinter of wood about the size of a match from the skin of the elbow region. The animal was very lame for over a week, after which the lameness gradually passed away, and he made a good recovery with no recurrence.

I have attempted in this short article to express my views as clearly as possible, and I hope in the discussion which follows that I will be able to defend the ideas which I now hold.

EQUISETUM POISONING.

By Frank A. Rich, V.S., M.D., Professor of Veterinary Science, University of Vermont, Burlington, Vt.

A Paper read before the 39th Annual Meeting of the American Veterinary Medical Association at Minneapolis, Minn., Sept. 1–4, 1902.

The purpose of this paper is to call the attention of the members of the American Veterinary Medical Association to the poisonous effects produced upon horses, and possibly other herbivorous animals, from eating the equisetums, especially the *Equisetum arvense*, or common horsetail. The frequent occurrence of unmistakable equisetum poisoning in some localities, considered together with the widespread distribution of the plant, make it appear that this form of poisoning occurs far more often than is generally supposed, and that possibly many cases passing under diagnosis as something else are allowed to perish for want of definite knowledge on the part of owner, attendant, and perhaps the attending veterinarian, concerning the exact nature of the trouble, and especially its etiology. We feel, however, that such ignorance of the past, in this country at least, is in a great measure excusable, for there is almost no literature in the English language pertaining to the subject. In view of these facts we trust we may be pardoned for entering into a brief description of the plant itself, that we may get somewhat better acquainted with it and the more readily recognize its several species when occurring in hay.

The Equisetaceæ, which form an entirely independent class of the cryptogaminous or flowerless plants, include only one genus equisetum (horsetail family), which comprises forty or more species, about a dozen of which occur in this country. They vary in size from the small *E. scirpoides*, about one to six inches in height and exceedingly slender, to the maximum of the tropics, measuring from twenty to forty feet in height. The more common species range in height from six inches to two or three feet, the structures of all being remarkably uniform. They are widely distributed over the temperate regions of the northern

hemisphere, decreasing in number both toward the pole and equator, being rare in the southern hemisphere.

The equisetums are readily distinguished by their characteristic structure and mode of development. The aërial stems arise from a creeping, underground rhizome, upon which in some species, *i. e.*, *E. arvense*, bulbs or tubers develop containing sufficient food material to enable them to lie dormant for years. The stems are slender and distinctly jointed, presenting symmetrical, hollow, longitudinally furrowed internodes, the solid nodes being encircled by a dentated leaf sheath bearing a whorl of slender-jointed leaves resembling the stem. On account of its limited leaf surface and the presence of chlorophyll and stomata in the stem it falls into the class of so-called switch plants in which the usual assimilative function of leaves is relegated in part to the stems.

The asexual generation of the equisetum is characteristic and very interesting. At the extreme top of the erect stem there is a cone or spike of circumferentially arranged shield-shaped scales, on the under surface of which the spores are developed. In some species, including the common *E. arvense*, a special stem arises from the rhizome, the fertile or fruit stem which bears the cone but no leaves at the nodes, the leaf or sterile stem appearing later. Most species grow by preference on low, moist lands, some are decided water plants, while some will grow almost anywhere provided the soil is sandy or gravelly.

We first met with cases of equisetum poisoning in 1890 while practicing in the Genesee Valley in Western New York. A diagnosis was not made at that time, but the supply of swale hay became exhausted and the animals recovered in spite of energetic medicinal treatment. Upon meeting further cases in the Champlain Valley in Vermont, two years later, we became satisfied that the cause of the peculiar affection existed in the hay. The hay was usually of inferior quality, containing one or more species of ferns, generally the sensitive fern or polypod brake as well as weeds of various kinds, and, as was disclosed by careful investigation, the less conspicuous horsetails. Inquiry among

the farmers of Vermont at institute meetings, and through a circular addressed to them relative to plants poisonous to stock, developed the fact that many had experienced fatal poisoning of horses from feeding hay grown on low-lying meadows, and that they were often compelled to avoid certain fields in selecting their horse hay. Several farmers and horsemen exhibited the particular plant which they believed to cause the trouble, and in every instance it proved to be either *E. arvense* or the sensitive fern.

Such experiences coupled with our own observations relative to the matter caused us to feel very confident that the horsetails were the real cause of the trouble, for in all except our earliest cases careful search always revealed more or less of the equisetum in the hay, while the *Onoclea sensibilis* or sensitive fern could not always be found. On the other hand, we know of farms where *Onoclea sensibilis* forms a large part of the hay grown and is fed to all the farm stock without untoward results.

FEEDING EXPERIMENT.

The apparent extent of the trouble in Vermont, and the conspicuous absence of literature on the subject in the English language, at least, made it seem advisable for the Vermont Experiment Station to investigate the matter thoroughly by feeding experiments and otherwise, and to publish a bulletin explanatory of results for distribution among the farmers. Accordingly in the summer of 1900 a supply of horsetail was secured and cured as for hay. In the following winter it was mixed with good timothy hay in the proportion of one part to four of the latter and fed freely to horses procured for the experiment. One old horse (a poor feeder) received also a small amount of grain. In from two to four weeks all presented the characteristic symptoms hereinafter described, and at the close of the fourth week one died. The following year, 1901-02, the experiment was repeated with the same general results. The horses employed in this second trial being older did not respond quite so early to the action of the poison, but the symptoms were more

severe when once developed, and the trouble progressed to a fatal termination in a much shorter time.

The general symptoms presented in connection with both feeding trials were identical with those observed by us in so many cases before, and the lesions revealed upon post-mortem examination were also similar.

E. ARVENSE.

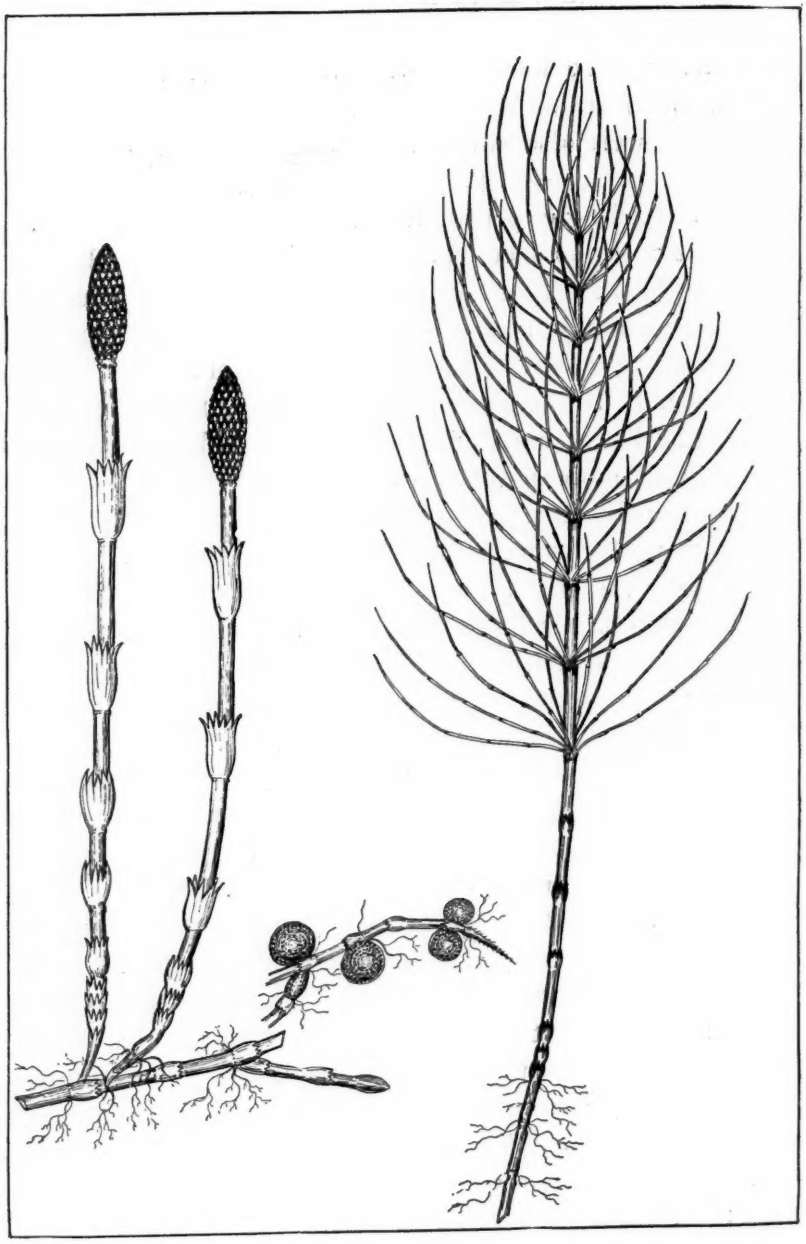
In both feeding experiments *E. arvense* was employed. It is the most common species, in fact, is called common horsetail. Other popular names are coltstail, foxtail, catstail grass, pine-grass, snake grass, jointed rush, meadow pine. The specimens presented are no doubt familiar to most of you.

Professor L. R. Jones, Botanist of the Vermont Experiment Station, who has also given the matter considerable attention, believes that "more or less of the plant may be found on almost every farm in the state." It is probably almost equally common throughout northeastern United States and Canada. Britton's Manual gives the distribution in America as "Newfoundland and Greenland to Alaska and south to Virginia and California." It is also a native of Europe and Asia.

It thrives best on low, moist, sandy or gravelly land in the river valleys on intervale meadows, occasionally overflowed and not frequently plowed. The hidden perennial rhisome sends forth the fertile or fruiting stems in early spring (April-May). They are pale yellow, jointed, erect shoots, without leaves and terminated by the fruiting cone or spike. After fructification they disappear to be followed by the green branched sterile stems in May and June, which grow to a height of six to eighteen inches.

SYMPTOMS OF EQUISETUM POISONING.

The most constant and noticeable symptom is the loss of co-ordination of muscular movement, beginning as a slight unsteadiness or uncertainty of gait, most marked when excited. This seeming slight difficulty of locomotion develops more or less rapidly into reeling and staggering when moving, from which the trouble received its German name "*Taumelkrankeit*" (staggering disease). Many of the cases refuse to lie down,



standing with the feet braced, and the body swaying from side to side. There is always apparent loss of flesh, but this is no doubt more apparent than real on account of the progressive muscular rigidity assumed to compensate for difficulty of co-ordination.

A peculiar apprehension figures very prominently among the nervous phenomena of equisetum poisoning. The animal appears frightened, starts at slight noises, and two or more running loose will huddle together when approached.

The appetite generally remains good, even when the animal is down and unable to rise. Thirst is quite marked at times. Temperature frequently becomes sub-normal, rising to 102–3 after going down, probably because of trauma and excitement.

Pulse is full and slow except when excited, increasing to 80–100 when down.

Bowels are constipated throughout course, fæces hard and dark colored, and defecation is attended with straining. Kidneys are active, a large amount of clear, pale urine being voided, showing a low specific gravity.

Mucous membranes are pale, except the conjunctivæ, which are often considerably injected.

Eyes appear very bright, but the pupils are usually much dilated, not responding well to light.

Respiration is normal, when quiet, until late, when it becomes mechanical.

Spirits are good while the case is able to stand. Young animals will even try to play when turned loose, although scarcely able to keep their feet.

After going down they usually live for several days and sometimes two or three weeks, when well nursed.

Movements and noises cause great nervous excitement, all the skeletal muscles become contracted and the limbs are extended and rigid, yet if gently handled, food and water are taken with seeming relish until the animal is too weak to do so.

The horse finally dies from exhaustion induced by trauma and frequent attempts to rise.

Upon post-mortem examination the muscles are found to be pale and flabby, and there is usually some serous effusion in the peritoneal cavity. The principal lesions, however, seem to be in connection with the meninges of the cerebellum and spinal cord, which appear congested and usually contain a considerable serous exudate. In one case, that about the cerebellum was turbid. The digestive tract and other viscera seem normal, except in so far as could be accounted for by medicinal and other interference while down.

A mild or chronic form of equisetum poisoning occurs in young horses and colts from eating moderate amounts of the plant. They become unthrifty, develop some unsteadiness of gait, appear nervous and easily startled by noises.

It requires a long time for such cases fully to recover. We were told by two gentlemen who had had experience with this form of poisoning in colts that they never did so well afterward.

* Fröhner mentions a chronic form of poisoning from the equisetums in which he says they develop a cachexia, finally dying from paralysis and exhaustion.

CONDITIONS INFLUENCING ITS ACTION.

The action of the equisetums upon horses is influenced by certain well-known conditions, as:

Age.—Young horses respond to its action far more quickly than older animals. Colts may show well-marked symptoms in from five to ten days, while old horses sometimes eat large amounts of it for four or five weeks before its poisonous effects become manifest.

Feed.—Horses receiving grain are far less susceptible to its action. Some farmers who experienced trouble in the past from feeding hay containing considerable quantities of equisetum are now feeding it along with a liberal supply of grain without serious consequences.

Quantity.—Many horses eat hay containing a small quantity of equisetum with impunity.

Condition of the Plant.—We find no record of equisetum

* Lehrbuch der Toxikologie für Thierärzte.

poisoning from eating the green plant in pastures. The poison may be developed in drying, or the laxative effect of the grass eaten with it may prevent the cumulative action of the poison.

* Kerner says animals do not eat green equisetums readily and attributes the fact of the large amount of silicic acid in its cell wall, the function of which he believes to be to prevent the wholesale extermination of the plant.

Equisetums are said to be poisonous to cattle also, but we can find no evidence to substantiate the statement. We know of one instance where hay estimated to contain ¼ part of *E. arvense* was eaten regularly by cows with impunity. This hay fed to horses caused symptoms of poisoning in five days. The testimony relative to sheep is contradictory. Personally, we know of no cases of poisoning in sheep.

† Dammann fed from three to four pounds per day of fresh *E. palustre* to sheep for nine consecutive days without symptoms of poisoning.

LITERATURE.

We know of no literature in the English language bearing directly upon this subject of equisetum poisoning, except a paper by Professor L. R. Jones, ‡ University of Vermont, and Bulletin No. 95 of the Vermont Experiment Station.

In a review of foreign literature we find quite a number of cases of equisetum poisoning described by German and Russian authorities.

§ Fröhner has collected accounts of several cases which he describes in his excellent text-book of toxicology.

‖ Dammann presents the same with some additions. Many of the cases described were produced by other species of *Schachtelhalm: E. palustre*, *E. limosum*, and *E. hymale*, but symptoms and post-mortem appearances described were similar to those observed and described herein caused by the more common *E. arvense.*

* Nat. Hist. of Plants, Vol. I., Part I., 432.
† Gesundheitspflege der landwirtschaftlichen Haussäugetiere, 603.
‡ Proc. Soc. Prom. Agr. Science, 1901.
§ Lehrbuch der Toxikologie für Thierärzte.
‖ Die Gesundheitspflege der landwirtschaftlichen Haussäugetiere.

Following we present a brief description of a few of the cases occuring in our practice.

Case 1.—Called to a three-year-old mare, found her down, unable to rise, muscles contracted, limbs extended and rigid, very nervous, startled at slight noises, pulse 60, temperature 102.

Extended our examination to fifteen other horses on the farm and found eight others showing well-marked symptoms of horsetail poisoning. They seemed nervous and apprehensive, reeling and staggering like drunken men when turned loose in the yard. All fifteen were fed good timothy hay, but the nine affected ones had been bedded for nearly three weeks with swale hay containing a large amount of equisetum, of which they ate greedily. The other six were bedded with straw and appeared perfectly well. The one found down died after fourteen days, while the remaining eight all recovered in from two to four weeks.

Case 2.—Three horses in a livery stable, previously quiet, became very nervous. One trembled from fear when approached, another had developed profound fear of bicycles and electric cars. Two of them had been treated by a veterinarian for a nervous affection, but continued to grow more nervous. We had them walk out, and all showed marked difficulty of coordination.

An examination of the hay fed to them revealed an abundance of equisetum, and a change to wholesome hay resulted in a complete cure in two weeks.

Case 3.—A mare and four-months-old colt by her side ate hay containing a moderate amount of horsetail for ten days, when the colt developed poisoning symptoms rapidly, went down and died two days later. The mare continued to eat the hay for four weeks longer, when she, too, became nervous and began to reel in walking, from which disorder she was two months in recovering. This case is interesting in that it illustrates the influence of age on susceptibility to the action of the plant.

Case 4.—A remarkably gentle young horse exhibited decided incoördination of hind parts, trembled with fear when approached or handled, became frightened and attempted to run away, but soon fell and suffered from a severe epistaxis. The horse had been fed mixed hay containing a dangerous amount of equisetum for nearly three weeks. Cows on the farm had eaten of this hay for five months without apparent injury. Change of hay fed resulted in a complete recovery.

TREATMENT.

Having made a diagnosis of equisetum poisoning and proved the same by finding the plant in dangerous amounts in the hay, it is needless to say that the consumption of this hay should be immediately discontinued.

A dose of physic is of service in aiding the removal of unabsorbed poison contained in the alimentary canal.

We recommend the use of slings in all acute and far advanced cases, while still able to stand, for when once down the prognosis becomes extremely grave.

Stimulants and tonics are no doubt of service in tiding over, provided their administration does not cause too much excitement.

The free exhibition of potassium iodide has been attended with good results in some decidedly chronic cases with a tendency to slow recovery.

ANALYSIS AND MEDICINAL PROPERTIES.

Samples of the equisetum employed in the feeding trials at the Vermont Experiment Station were analyzed by Mr. C. H. Jones, Station Chemist, with the following results:

Moisture (as received)	14.31 per cent.
Dry matter	85.69 "
	100.00 "

Dry matter contains:

Crude ash	19.40 per cent.
Crude protein	10.94 "

Crude fiber	21.30	"
Nitrogen free extract	46.30	"
Crude fat (ether extract)	2.06	"
	100.00	"
Nitrogen	1.75	per cent.
Phosphoric acid	0.61	"
Potassium oxide	4.07	"
Calcium oxide	4.01	"

* F. A. Young found that it yielded to petroleum benzine as a solvent 1.4% of a brownish-green semi-liquid fixed oil which was readily saponified.

It also contains a green, semi-solid resin, sugar and mucilage.

† The infusion of the whole plant (*E. hymale*) has the reputation of being diuretic and is used sometimes in dropsical and renal diseases. The tincture has also been employed in 3 to 5 drop doses.

THE KANSAS CITY VETERINARY COLLEGE has an enrollment this year of 131, the largest in the history of the college. The injection and dissection of dogs has added interest in the dissecting room to the seniors, in addition to horses and cattle.

ENGLAND HAS CONFIDENCE IN OUR INSPECTIONS.—*London, Dec. 18.*—Dr. Wray, a veterinary surgeon, who represents the United States Agricultural Department at the Deptford cattle depot, told a New York *Sun* correspondent to-day that since the prohibition of the importation of cattle from the New England States the British officials had not found even a suspicious case among American cattle, and that they were perfectly satisfied with the precautions taken by the American Government to stamp out the foot-and-mouth disease. Dr. Wray added that he believed that if the outbreak had occurred in any other country but America the British Board of Agriculture would have placed an embargo on the whole country, but it was satisfied with the American precautions and was convinced that they are promptly and thoroughly enforced. Dr. Wray was confident that the prohibition would have little effect on the total of American exports to England, which are heavy this week, there being due to arrive 3348 cattle and 2445 sheep.

---

*A. J. P., 1886, 419.

† U. S. Dispensatory, eighteenth ed., p. 1645.

THE ETIOLOGY OF "HEAVES."

By W. L. Williams, V. S., Ithaca, N. Y.

In the November Review (p. 752), Dr. A. H. Baker repeats the oft-made claim that "heaves" "is produced by long-continued over-eating on over-ripe hay," and mentions timothy and red clover hay as the chief offenders.

There is excellent, if not indisputable evidence that "heaves" practically never arises except when so fed, but over-ripe timothy, clover or other food seems insufficient in itself to induce the disease. The over-ripe condition in itself merely introduces an extra amount of woody fibre in comparison to the nutritive particles contained. Other kinds of hay, though far more woody, do not induce "heaves." Prairie hay, straw and corn-fodder do not induce the disease, though allowed to stand long after ripe. The wild grasses of the western plains ripen early in the summer, and the horses graze on this dry, woody food for months each year, but do not contract "heaves." It occurs in stables. At the same time, in stabled horses fed on over-ripe hay, or on straw, with non-laxative grain rations, and perhaps a defective supply of water, there not infrequently occurs from indigestion, impaction of the great colon, but this impaction with woody food shows no tendency to cause "heaves."

In those areas where timothy and clover hay is produced only with the aid of irrigation, "heaves" does not occur. In those sections it grows more luxuriantly, is coarser, and stands more erect, suggesting a greater amount of woody fibre. The farmers are far less careful about the exact season of cutting, and over-ripe hay is quite as common at least as in countries where "heaves" abounds, and no more careless feeders of hay are to be found, as they have no fear of "heaves."

It is well known that a few years since, when the sub-arid region west of the Mississippi river was being rapidly settled, and the demand for horses exceeded the local supply, dealers

habitually bought horses affected with "heaves" and sold them to farmers in the sub-arid belt, knowing the disease would at once cease. The cure was attributed to prairie hay, and no doubt correctly. But go further west into the irrigating regions and the clover or timothy hay will also cure "heaves." Some may think climatic influences upon the animals brings about the cure, but not so, for imported timothy or clover hay causes the disease in these areas.

The question may arise: is timothy and clover hay the direct cause of "heaves" or is it the bearer of the cause of the malady?

There are some marked differences in the character of over-ripe hay grown in arid and humid areas, which should be remembered in considering the cause of "heaves."

In irrigated areas hay, no difference how ripe, has usually not been moistened at any time by rain or dew for a month before cutting, nor while lying in the field. It is, therefore, free from those cryptogamic parasites, rust, etc., so familiar to most of us. Mouldy it may become, if stacked too green, but this does not, so far as known to us, induce "heaves."

In humid areas, where the rainfall is heavy and dews are abundant, over-ripe hay is largely the result of delays owing to extra wet weather, so that in addition to becoming over-ripe, the excessive humidity has favored the growth of fungi. Greatly in addition to this humidity, the over-ripe condition also favors parasitism. Rapidly growing vigorous green vegetation resists the inroads of cryptogams, but once their tissues have become inert by "ripening," they become vastly more vulnerable. It is a common belief of horse owners that such hay is less injurious if thoroughly shaken before feeding. Possibly, if the hay is the *bearer* of the cause of "heaves," it may to a degree be mechanically shaken out, but if the woodiness is the direct cause, then shaking cannot benefit it.

It is possible, if not probable, that if "heaves" is due to some contamination of over-ripe timothy or clover hay, that the cause is not the ordinary mould seen in hay stacked too

green, but to some parasitism developed in the field, while the fodder is still uncut.

As to the curability of "heaves," the writer has not seen a case which would not recover without medication when placed upon proper diet.

The relation of pulmonary emphysema to "heaves" is variously viewed. It scarcely seems that the "emphysema" causes the "heaves," be the former ever so bad. In a susceptible subject, where the malady has been ameliorated by dieting until practically unnoticeable, a full feed of bad hay will render the animal unable to walk and seriously threaten asphyxia in a period of eight or ten hours; surely emphysema cannot be so quickly established to such a violent degree. Then take this same animal, almost ready to fall from asphyxia, and a full dose of atropine sulphate hypodermically will relieve the "heaves," and restore tranquility within ten minutes; surely emphysema of so serious a character cannot be so quickly cured nor relieved.

Emphysema exists beyond a doubt, but what relation does it bear to etiology or symptoms?

If "emphysema" causes the "heaves" then there needs be an explanation of how woody fibre (accepting the over-ripe hay theory) in the stomach can cause rupture of air cells in the lungs. Observing a severe case of "heaves" one might well be surprised that the horse does not rupture some other things besides a few air cells.

We cannot understand how a horse can "heave" violently without causing "emphysema," and we see plenty of cases of marked "emphysema" without "heaves" when the patient is dieted, or drugged, or it is said that the "heaving" may even be stopped by jockeys by a liberal drench of shot and lard.

EXPERIMENTS IN CATTLE AND PIG FEEDING.—The Nebraska Experiment Station has just issued Bulletin No. 75. This is a condensed report on the experiments in feeding animals for the past three years. The bulletin may be obtained free of cost by residents of the state, upon writing to the Agricultural Experiment Station, Lincoln, Nebraska.

REPORTS OF CASES.

"Careful observation makes a skillful practitioner, but his skill dies with him. By recording his observations, he adds to the knowledge of his profession, and assists by his facts in building up the solid edifice of pathological science."

AS TO THE TREATMENT OF PARTURIENT PARESIS.

By J. B. CAUGHEY, D. V. S., Columbiana, Ohio.

I was called on November 15th to see a cow with parturient paresis. She had calved on Tuesday, and was lying on her left side. I placed my finger on the eyelids, which did not move. Temperature, $97\frac{5}{10}$° F. Gave the injections as recommended by Dr. Clannahan, of Tennessee, in the February REVIEW (potassium iodide, carbolic acid and glycerine), at 10 A. M., put sponge wet with cold water on her head, also covered her with two blankets. In thirty minutes temperature 99° F. Left at 10.30 A. M., stating I would return at 4 P. M. Found cow looking bright; temperature 103° F. and winking, also moving ears, but had moved herself around some, and was again on her side, having gotten away from the sack of straw I had placed against her shoulder. Milked out the four quarters and repeated the injection, still using the four drachms of potassium iodide, same as first time. Turned her over to inject in two lower quarters. She then aroused and held head up and drank some water. Her bowels had moved some before I arrived. Did not return again, but owner reported on Tuesday that she got on her feet the next morning. This cow had very little gastric trouble; did not bloat any, and did not have any medicine given her by the mouth. I lose all cases of parturient paresis I am called to treat if someone has been drenching them. Lost a case some six weeks since that I treated. A neighbor had given her a pound of salts; she lingered for two weeks; did not eat any unless it was placed in her mouth; would walk around; had a watery discharge from the bowels, which continued until she died. She only had 150 grains of potassium iodide in addition to the carbolic acid and glycerine. The acid and glycerine were not given, only the potassium iodide. I have come to the conclusion that epsom salts must aggravate the disease, as some of it possibly finds its way down the trachea. I dread to treat a case that has been drenched, and have refused two persons in the past four months that came for me to treat their animals.

I would be glad to hear from other practitioners in regard to their experience on that line.

I have noticed in some practitioners' articles or reports of cases of parturient paresis they give the temperature as 104 and 105°. I invariably find it subnormal, viz., 95, 96 and 97°. I had one case this spring that was 107° ; she died in one hour. I held a post-mortem, as I supposed she had congestion of the lungs, but found the lungs healthy. It must have been some septic trouble.

COMPLETE EVERSION OF THE UTERUS IN A MARE—RECOVERY.

By J. F. DEVINE, D. V. S., Goshen, N. Y.

On Jan. 18, 9 P. M., received a hurried call to the Parkway Farms, and found a bay mare, due to foal ; had been seen by attendant at 8 o'clock, and showed no symptoms of parturition. Mare is now lying on side, with uterus everted and covered with litter, etc. Suddenly she jumps up and whirls the dependent mass against the siding, which causes profuse bleeding. We finally get it on a clean sheet, and after thoroughly cleansing with Sanitas solution, return it to its normal position. Then slush it out freely with the same—four or five pails of warm solution. Attention is now turned to her physical condition. Temperature 103°, pulse 80 and small ; body covered with cold perspiration ; mare becoming quite uneasy. Gave a drench of ergot, cannabis indica and alcohol ; applied alcohol freely to the body, with friction by three attendants on either side ; covered the body and legs well, and used cannabis when indicated. She soon became quiet and warm ; laid down in about two hours, when straining becomes more frequent, until finally I decided to flood the uterus again, which had a decided beneficial effect, and the straining gradually and permanently subsided. An attendant was left with her constantly, with instructions to press the open hand on the vulva should she show signs of straining.

Her temperature hovered around 103° for four or five days. There also was a slight discharge for about a week, which received no attention.

She made an uneventful recovery. The colt was returned to her on the second day and runs with her still.

PECULIAR DIGESTIVE SYMPTOMS IN A HORSE.

By A. H. IDE, V. S., Lowville, N. Y.

The following described case has proven a puzzle to me, and I write to the REVIEW in the hope that some fellow-practitioner

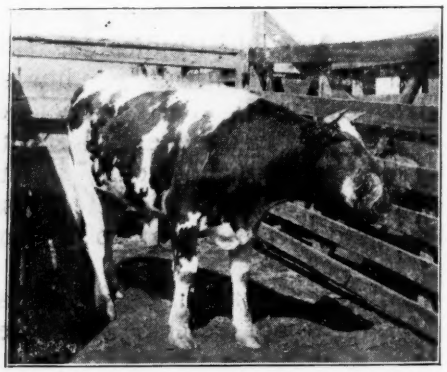
may throw some light upon the etiology and pathology, and at the same time help to build up our clinical literature.

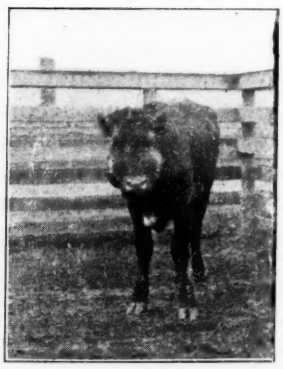
The patient is a six-year-old mare, weighing 900 pounds, and trotting-bred. The owner says he noticed that the animal seemed to belch gas from the stomach, and he thought that it was caused by a hard drive when she was in a weakened condition, just from grass. She commences to belch gas about one hour after feeding, and continues for about two hours. The eructations cease as soon as the gas begins to pass per rectum. The kind or quantity of the food does not alter the condition. The mouth is continually in motion, and is filled with a sticky saliva, which appears as soon as the belching begins. The nature of the eructations is in the form of rhythmatic contractions of the œsophagus, which has the appearance of a bolus of food ascending and descending, accompanied by a gurgling sound. The animal is predisposed to colic, and the above symptoms have been in existence for a year.

Any information respecting the cause, treatment, or prognosis will be gratefully received.

ACTINOMYCOSIS IN STEERS.

Dr. Don C. Ayer, Chief of Inspection, Bureau of Animal Industry, at South Omaha, Neb., has kindly forwarded the accompanying photographs of two condemned steers, affected with actinomycosis, and, as will be observed, one is in good flesh, the other quite thin.





THE New York *Spirit of the Times*, the oldest turf newspaper in this country, having been established in 1831, has been purchased by and consolidated with the Chicago *Horseman*.

EXTRACTS FROM EXCHANGES.

GERMAN REVIEW.

By ADOLPH EICHHORN, D. V. S., Bureau of Animal Industry, Milwaukee, Wis.

A NEW PROCEDURE IN PREVENTIVE INOCULATIONS AGAINST ANTHRAX [*Dr. G. Sobernheim*].—Sobernheim, a few years ago, communicated that he succeeded in protecting sheep against experimental anthrax, with the aid of an effective anthrax serum. These experiments proved successful against the feeding of anthrax spores, as well as against subcutaneous inoculations of anthrax bacilli. Farther on, I tried to transfer this passive form of immunization into an active form, using a mixture of anthrax bacilli for the preparatory treatment. For proving the practical applicability of this method on cattle, the author undertook extensive experimentations on this line, in which he was supported by the Prussian Agricultural Department, and by the Agricultural Society of Saxony. The same were begun in February, 1900; for obtaining the serum, two horses, two cattle, and six sheep were used, which were placed in the stables of the bacteriological institution of the Agricultural Society. The treatment of these animals consisted in accordance with the usual principles; at first weakened; later highly virulent cultures were inoculated in increased doses. For the experiments altogether 33 sheep and 18 cattle were used. In the passive immunization, the animals received the serum injected subcutaneously, in various quantities, changing from 10 to 100 ccm., sheep under the skin of the neck, and cattle under the skin of the left side of the neck. A few minutes later they were infected with material of the highest virulence. The combined immunization was accomplished somewhat in another way as in the previous experiments, namely, serum and culture were not used in a prepared mixture; they were injected apart at different places. Generally 5–10–15 ccm. of serum was injected on the left side of the neck and right after 0.5–1 ccm. of slightly weakened anthrax culture in the right side of the neck. Twelve to fourteen days after, they were infected with virulent anthrax. To every series of experiments, one or two not treated control animals were used. The results showed *that the anthrax serum in the form*

of pure serum immunization, as well as in the combined application with cultures, proved fully the success of the previous experiences, and also proved to be reliable in sheep and cattle. But as the laboratory infection cannot always be identified with the natural disease, therefore inoculations were applied in practice, and in localities and herds where anthrax always was prevalent in great dimensions. These conditions were found fulfilled in the province of Pommern, where the majority of the inoculations were undertaken. In all, up to this time 2700 cattle were inoculated; of those, about 1500 were by Sobernheim himself, the others by competent veterinarians. At first the pure serum immunization was applied, altogether in about 200 cases, but later the combined method was exclusively used. All the animals got over the inoculations without disturbance to their general health; none of them died from the effects of it. At every place where anthrax existed, whether it came on as a sudden outbreak, or was prevalent there for some time, with the aid of the preventive inoculations the outbreak was soon controlled. *From the moment of the inoculations there was not one new case observed.* The immunity from the inoculation proved to be of longer duration and more constant than derived from other methods. The observations made, till this time, which extend over a longer period than nine months, proved that all the animals which were treated with the combined inoculations, were spared from the disease in spite of the fact that in the neighboring localities, where the preventive inoculations were not applied, the disease was prevalent. In numerous cases badly affected animals were saved by larger doses of serum. The anthrax serum therefore proved to be effectful as a curative. From the observations made, Sobernheim's procedure is adaptable as a preventive and curative remedy in combating anthrax. The combined immunization, the simultaneous inoculation with serum and culture, ought to be employed for prophylactical uses at every place where there is a need to protect the endangered stock for about a year against the disease. Besides, the pure serum immunization may be taken into consideration as passive immunization at times, when there is a need for quick action, but not for long duration, and also, for instance, in herds where an outbreak already exists and the disease is to be stamped out rapidly. But in this case it would be advisable to complete it later with the combined inoculation. The advantage of Sobernheim's procedure over Pasteur's method of preventive inoculations are charac-

terized by: (1) The inoculation is dangerless in regard to the health and lives of the animals. (2) The inoculation can be executed in one day, and has not to be repeated, as in the case of Pasteur's method. (3) Stronger and more efficacious cultures are inoculated than in the Pasteur vaccine, whereby in all probabilities a more intense immunization of longer duration results. (4) The anthrax serum itself can be applied in the treatment of diseased animals, which is not the case in Pasteur's method.—(*Berl. Thierarzt. Wochenschr.*)

BEHRING'S IMMUNIZATION AGAINST TUBERCULOSIS.—In last month's editorials of the REVIEW I had the pleasure to read an account of the successful experiments performed by von Behring in regard to immunization of cattle against tuberculosis. As experiments in the laboratory, these have already proved to be a success, and as to its results in practice, Melde, assisted by others, who took a course at the Hygienic Institute, and became acquainted with von Behring's immunization method, started extensive experiments, which are to prove: (1) Whether, by Behring's method, immunized cattle withstand the natural tubercular infection; (2) for what length of time the immunized cattle are protected against tubercular infection; (3) whether two inoculations suffice to confer the animals with a constant immunity, and (4) in what way, and with what financial sacrifice, can the immunization for tuberculosis in cattle be applied in practice. These experiments, as stated, have already been started in the counties of Marburg, Kirchheim, and Frankenberg; altogether about 175 cattle were inoculated in the last two counties; the animals received the first inoculations, while on those in Marburg both inoculations were performed. It will take several years to decide on the four questions. The inoculations were performed in herds where a number of animals suffered from tuberculosis, as proved by the tuberculin test, so that the inoculated animals are constantly in the same stable with the infected ones. The results of such experiments will be naturally more conclusive. The results of those inoculations are of the utmost interest for veterinary science; it means the beginning of the fight to combat this most dreadful disease.—(*Berl. Thierarzt. Wochenschr.*)

IMPROVEMEMT IN THE TREATMENT OF PARTURIENT APOPLEXY [*J. Schmidt-Kolding.*] —Schmidt applies now his treatment with an essential modification. He uses an apparatus to which is attached a bellows. The milk catheter is introduced into the teat, after which, from the bottle turned with the cork

downwards, a ¼ liter of the iodide of potassium solution is allowed to flow into one gland. Then the bottle is turned over, and air is pumped through the iodide of potassium solution into the mammæ until it becomes tense. This is repeated in all four glands, and followed with a massage of the mammæ. After 15 minutes considerable improvement is noticed, and in two to three hours the animal as a general rule gets up.—(*Tijdschr. voor. Veeartseny.*)

A NEW HUMAN ORGAN AND ITS FUNCTION.—Dr. Zuckerkandl, professor of anatomy in Vienna, a short time ago discovered a new organ, which he signifies as a side organ of the sympatheticus. The same are situated in newly-born children, and embryos, as pairs, on both sides of the aorta in the retroperitoneal space, as narrow, light brown, up to 11 mm. long bodies, of the consistency of a lymph gland. By its conformation it appears very much like the cortical substance of the superrenal capsules, and so is its physiological function very similar to it. The extract of this organ, injected intravenously, increases the arterial pressure, and reduces the number of pulse beats; also periodically arythmia was observed. As the superrenal capsule develops completely only some time after birth, the author believes that the newly-discovered fœtal life organ performs the function of the superrenal capsule during development of the child.—(*Musnchen Med. Wochensch.*)

ENGLISH REVIEW.

By Prof. A. LIAUTARD, M. D., V. M.

INTUSSUSCEPTION OF THE SMALL INTO THE LARGE INTESTINE AND PROTRUSION OF THE FORMER OUTSIDE THE ANUS SO AS TO RESEMBLE PROLAPSUS RECTI IN THE DOG [*H. Gray, M. R. C. V. S.*].—After recording the case of a three-months-old pup which had protruding of the bowels from the anus, and upon which, after three unsuccessful attempts at reduction, the operation of laparotomy had to be performed, to reduce the intussusception, but was followed by death through perforative peritonitis, the writer, from this and several similar cases observed, arrived at the conclusions: "(1) That dogs and cats may have extensive displacement of the bowel without manifesting any serious disturbance, providing milk or liquid diet is given; (2) that in a case having an appearance of the so-called prolapsus recti, it may in reality be a case of intussusception of some

portion of the bowel; (3) that in case the usual suturing of the anus, passing a stout rectal bougie, giving of enemas whilst the anus of the dog is up in the air and his nose towards the ground, fail to keep the bowel up in the rectum, laparotomy and intra-abdominal examination of the bowels should be carried out without delay; (4) that in the case of intussusception or even kinking of the bowel favoring a recurrent prolapse, reduction should be made intra-abdominally after other methods have failed; (5) that in a case where it is feared that the bowel is likely to become again intussuscepted or prolapsed suturing it to the abdominal wall is advisable; (6) that in intra-abdominal reduction of an intussuscepted bowel the manipulations should always be commenced at the furthest extremity of the intussuscepted bowel and only very little applied to the anterior part of the bowel until the last portion is come to; it should be pressed up between thumb and finger commencing at the distal end; (7) that the incarcerated portion of bowel is very liable to undergo a reaction when released, and therefore only a milk diet should be given for a few days at least; (8) no mutilative surgery should be performed unless the bowel has undergone gangrene."—(*Vet. Record.*)

Uterine Abscess in a Mare [*R. Barron, M. R. C. V. S.*].—This mare had been bought recently, and for a week has eaten little or nothing. Her temperature was raised, the bowels and bladder acting regularly, the abdomen was pendulous. There was little purulent discharge from the vulva, and vaginal examination revealed the os firmly closed, and the uterus gave the impression to the fingers of being fully distended. A diagnosis of purulent collection was made and a fatal termination looked for. After a few days the animal grew much worse and suspecting pyæmia she was destroyed. At the post-mortem the uterus was seen to be enormously distended, as if containing a fœtus, and on being cut open between five and six gallons of thick creamy pus with an offensive odor escaped. The mucous membrane was thickened and showed marks of superficial necrosis. The author adds: "If I had punctured the uterus with a trocar or dilated the os, the abscess could have been evacuated."—(*Vet. Record.*) [Why did he not do it? Specially as he had had a similar case before in a heifer, which he was able to cure.—(*A. L.*)].

An Interesting Cryptorchid [*W. Bower and F. Hobday*].—Unusually interesting and rare is the case of a lady's hunter, which, being troublesome, was suspected of being a

cryptorchid. Being operated, a small irregular body was removed from the extreme upper portion of the right inguinal canal. The horse became quiet for two years, when his bad character returned. A second operation was performed, as it was supposed that possibly the mass removed in the first operation was not the complete testicle. This time a full-sized testicle with the epididymis missing was removed from the abdominal cavity. Radical cure of the bad habits followed. On incising the testicle a large *Strongylus armatus* escaped from its interior, having been apparently about an inch below the surface. The *Strongylus armatus* is not very uncommon in the scrotum of colts on the exterior of the testicle, but its presence in the interior has not been often recorded.—(*Vet. Record.*)

A LARGE CALCULUS IN A DOG [*A. J. Sewell*].—A retriever dog, only two years old, had appeared always in good health and condition and remained so up to a week of his death. At the post-mortem a calculus was found in the bladder weighing twenty-two ounces. From the photography of the stone, it measured 4½ inches in length and 2½ in width. The author says that the photograph is a shade smaller than the actual stone.—(*Vet. Record.*)

CHOKING IN THE HORSE [*W. R. Davis, M. R. C. V. S.*].—A colt had been turned out in a field where a lot of spoiled vegetables and potatoes had been thrown. He was found the next day standing in a corner of the field with back arched, saliva dribbling from the nose and very uneasy. On examination, he stood with his head straightened on the neck, making at times attempts to vomit, and discharging mucus from the nostrils. Evidently he was choked by some foreign body, probably arrested in the thoracic portion of the œsophagus, as nothing could be detected on the explorable portion of the organ. Oil administered was ejected through the nostrils, introduction of a probang was not possible on account of the refractory condition of the patient. It is then that the author resorted to an intravenous injection of pilocarpine, with which he had often good results in cattle. One and a quarter grains of the nitrate dissolved in 75 minims of water was given. In a quarter of an hour, there was great uneasiness, abundant sweating, fæces were passed twice and large quantities of saliva fell from the mouth. After half an hour, the animal seemed easier, took a few swallows of water and a little hay. He was kept tied up for four hours, then took bran mashes and hay. He has been well ever since.—(*Veterin. Journal.*)

PREGNANCY AFTER UNILATERAL OVARIOTOMY IN A TROUBLESOME MARE [*C. Page and F. Hobday, F. R. C. V. S.*].—A valuable thoroughbred mare had a foal and since had proven barren. Covered several times, it was always without success, and lately she has become troublesome, being always in heat. A diseased condition of the ovaries had been diagnosed, and an operation recommended. Under strict antiseptic precautions she was operated by removal of the right ovary, which was found more affected than the left, viz., smaller and harder than normal. She recovered from the operation without trouble and was covered twice. The first time she "turned," but on the second occasion she "held," and at the proper time was delivered of a strong and healthy foal. She is again pregnant.—(*Vet. Record.*)

EXTRAORDINARY DENTIGEROUS CYST OF THE EAR [*F. H. Ridler and F. Hobday, F. R. C. V. S.*].—These forms of cysts are not commonly met with, and when they are generally only one odontoma is present. In this case there were at least two, one being of very large size. Both were distinct from each other and embedded in its own socket. The animal in which they were found was a nine-year-old mare which since several years had suffered from purulent discharge under the ear. On several occasions a swelling would appear, burst or be lanced. Finally the constitution of the animal seemed to suffer from the trouble. She ate with apparent difficulty and had a good deal of pain. A probe introduced into the fistulous tract reached the rough irregular tops of a molar tooth, and an operation was decided upon, but as the animal was in a very poor condition it was found necessary to operate twice. On the first occasion an enormous odontoma, weighing 175 grammes, was removed, and on the second another, weighing 44 grammes. The animal improved considerably after the first operation, but as the wound did not progress satisfactorily the second had to be performed, and even after this it took three months for the wound to heal. The mare grew fat, but yet from the external conformation of the skull the authors think there is reason to suspect the presence of a third tumor.—(*Jour. of Comp. Pathol. and Therap.*)

MYOMA OF THE UTERUS, OVARO-HYSTERECTOMY—RECOVERY [*E. H. Williams, M. R. C. V. S., and F. Hobday, F. R. C. V. S.*].—This case occurred in a well-bred retriever bitch, eleven years old. She has had several litters of puppies, but lately two couplings have given no results. She is thin, weak, feverish, in continuous pain, and on manipulating the abdomen a

swelling is felt. Pressure on the abdomen caused a flow of purulent viscid fluid from the vulva. Treatment seemed to be of no avail, the animal grew worse, becoming prostrate and scarcely able to drag herself. At the end of two months the uterine swelling is felt about the size of an ordinary breakfast cup. Under strict antiseptic cares, ovaro-hysterectomy was performed. The tumor was about the size of an orange and situated in the body of the uterus, close to the junction of the two horns. The weight of the uterus and tumor was 1 pound 6½ ounces. Recovery was absolutely uneventful. The tumor examined under the microscope was found to be a myoma.—(*Journ. of Comp. Pathol. and Therap.*)

INTERESTING INSTANCE OF PROLIFERATION OF OVARIAN TISSUES [*F. Hobday, F. R. C. V. S.*]. — A six-months-old female cat having become a nuisance was castrated. But instead of ligaturing the horns and removing the ovaries, the latter were nipped off with the scissors. A week later the animal was sent home recovered from the operation. Five months later she had two kittens. When these were weaned, another operation was decided upon, and the abdomen was opened and the uterus exposed. The ovaries were found to be quite twice as large as they had been and cystic. This time the horns were carefully ligatured above and below each ovary and the whole of the intervening tissue removed. She had no more kittens. The case shows that even if a very small portion of ovarian tissue is left, pregnancy is possible, and also to what an extent those organs may be injured without the destruction of their function and activity.—(*Journ. of Comp. Pathol. and Therap.*)

THE champion pacing stallion "Dan Patch" has been sold to Indianapolis parties for the record price of $60,000.

"I SAY, DOCTOR, isn't this bill a little excessive? Can't you knock off $10 or so?" "No; why should I?" "Well, you must remember that it was my horse that introduced pinkeye in this town. Isn't that worth something?"

THAT great pathologist, Virchow of Berlin, whose death is mourned by the entire scientific world, said once: "The body of man is a commonwealth of cells, in which each individual cell stands for a citizen, while the tissues, muscles and bones represent different strata of society. Disease is merely a conflict between the citizens of this commonwealth, who ought to work harmoniously together." In view of this momentous fact it behooves us all to exclaim, "Let us have peace!"

BIBLIOGRAPHY.

THE PATHOLOGY AND DIFFERENTIAL DIAGNOSIS OF INFECTIOUS DISEASES OF ANIMALS. By Veranus Alva Moore, B. S., M. D., Professor of Comparative Pathology, Bacteriology and Meat Inspection, New York State Veterinary College, Cornell University, Ithaca, N. Y. With an Introduction by Daniel Elmer Salmon, D. V. M., Chief of the Bureau of Animal Industry, United States Department of Agriculture. With 8 plates and 73 figures in the text. Pages XIV+380. $4.00, postpaid. Taylor & Carpenter, Ithaca, N. Y. 1902.

The commanding importance of infectious diseases of the domestic animals has been the cause of an enormous amount of literature in the American veterinary journals for a number of years and the publication of innumerable special works, many of them translations, chiefly from the German; but we have seriously felt the want of a concise and systematic treatise which would in a plain and scientific manner place the subject before the English-speaking veterinary profession, divested of superfluities, but containing all of the material truths that have been accepted and placed among the archives of our knowledge. To the average practitioner and student the subject has appeared so vast and intricate that they have felt that to acquire a clear conception of it—to straighten out in their minds the technicalities and classification of the infecting microörganisms and the diseased conditions which they produce—was a task too large for their limited time and opportunities. The situation needed just such an effort as has been put forth by Prof. Moore, whose well-known versatility in this branch of modern medicine admirably fits him for so important a task. The profession will gladly welcome this new work, which brings the subject right up to the present state of the wonderful progress made in the study of infectious diseases. It is the intention of the author to elaborate upon this maiden volume, and he modestly craves the criticism and suggestions of his *confrères*, to the end that out of the concensus of professional knowledge a final treatise may be produced as nearly perfect as it is possible to attain.

The points that are especially worthy of note in this publication are: (1) The method of classification. The diseases treated are arranged in chapters based upon their generic etiological factors, *i.e.*, diseases due to streptococci are placed in one chapter, those due to bacteria, genus Bacterium, in another, and so on for the bacterial diseases, Migula's classification being followed. Then the diseases due to protozoa, fungi, and those for which the etiological factor is unknown are placed in separate chapters. A short chapter on diseases resulting from ani-

mal parasites, and which are liable to be mistaken for strictly infectious diseases, is included. There is an appendix containing a discussion on disinfection. (2) The book deals with the important infectious diseases of animals that occur in this country. With each disease there are a few references to its literature, in this the work that has been done in America has received special attention. (3) In discussing the different diseases considerable attention is given to the symptoms as well as to the etiology. Emphasis is also placed upon the importance of exact methods in diagnosis. (4) In the first chapter there is a concise discussion of infection, channels of infection, wound infection, and several of the diseases resulting from wound infection. Stress is placed on the differential characters of a specific infectious disease as contrasted with dietary and other affections. (5) The work is intended for students and those beginning the study of infectious diseases of animals.

An introduction by Dr. D. E. Salmon, Chief of the Bureau of Animal Industry, is in his forcible and convincing style, showing in the strongest light the greatest necessity for an exact knowledge of the subject by the present generation of veterinarians, and incidentally giving some statistical information regarding the immensity of the investment in domestic animals in this country.

The work is well printed by Taylor & Carpenter, of Ithaca, N. Y., and is now ready for delivery.

TEXT BOOK OF VETERINARY MEDICINE By James Law, F. R. C. V. S., Director of the New York State Veterinary College, Cornell University, Ithaca, N. Y Vol. IV. Infectious Diseases, Sanitary Science and Police. Large 8vo, 675 pp. Ithaca: Published by the author 1902

The great task which Prof. Law imposed upon himself of producing a complete treatise upon the vast subject of veterinary medicine is rapidly nearing completion, for during the past month the largest volume of the series was turned out from the bindery, leaving only the fifth volume unpublished, which is about ready for the press. Volumes I, II and III were reviewed in these pages more than a year ago. Volume I treated of general pathology, including diseases of the respiratory and circulatory organs, of the blood vessels and lymphatic system in all domestic animals, and consisted of 410 pages. Volume II had for subject diseases of the digestive organs, liver, pancreas and spleen of the various animals, and had 570 pages, while Volume III described the diseases of the urinary and generative organs, skin, eye, and nervous system, as well as constitutional diseases,

in 600 pages. The scheme of the series is to "place veterinary medicine on a modern basis, embracing the latest advances in bacteriology, pathology and therapeutics, and to recognize the commanding importance of microörganisms, not only in contagious diseases, but also in such non-infectious disorders as germs enter into as secondary yet most important factors." The present volume, therefore, is possibly the most important, as it is the largest of the series, from this standpoint, and the author has certainly performed a vast amount of real hard work in bringing up to date in a scientific manner the most recent discoveries in the microbian maladies. Each disease is treated of separately, and a good feature is the placing of a synopsis of the salient points in the text at the beginning of the chapter, which renders a reference easily made without the necessity of reading the entire article, where it is desired only to ascertain a point of information. The chapters successively are upon pyæmia and septicæmia, malignant œdema, infectious fevers of swine, rouget (rothlauf, red fever of swine—swine erysipelas), hog cholera, swine plague, modified and complex fevers of swine, septicæmia hæmorrhagica of bovine animals, of sheep, pneumo-enteritis of sheep, ulcerative infection of the limbs in cattle and sheep, gangrenous infection of the coronet of the horse, strangles (infectious rhino-adenitis), contagious pneumonia in the horse, infectious stable bronchitis, equine influenza (adynamic catarrhal fever of solipeds), epizoötic cellulitis (pink-eye), petechial fever (purpura hæmorrhagica) of horses, of cattle, chicken cholera, distemper in dogs and cats, bench-show distemper, emphysematous anthrax, anthrax, suppression and prevention of anthrax in herds, anthrax in man, glanders, farcy in cattle, rabies and hydrophobia, tetanus, foot-and-mouth disease, milk sickness, variola, vesicular exanthema of horses, infectious ulcerous stomatitis in lambs and kids, contagious abortion, infectious enterohepatitis in turkeys, asthenia in chickens, apoplectiform septicæmia in chickens, tuberculosis, louping-ill, braxy, South African horse sickness, dourine, mal de caderas, infectious paraplegia of solipeds in Maraja, infectious paraplegia of solipeds in Europe, Texas fever, ictero-hæmaturia in sheep, malignant jaundice in dogs, paludism in horses, surra, nagana, lung plague of cattle, Pictou cattle disease (hepatic cirrhosis), white scour, hæmoglobinæmia in the horse, infective ulceration of anus and vulva in cattle.

The above enumeration of titles gives a good idea of the immensity of the subjects treated, but conveys to the reader's

mind but an imperfect conception of the work which Prof. Law has accomplished, for some of these subjects are exhaustively considered, his article upon tuberculosis, for instance, requiring one hundred pages; glanders, influenza, lung plague, Texas fever, and anthrax are also lengthy chapters.

The work is written in that clear, forcible style which is characteristic of the author, and with that care and accuracy which distinguishes all of his work. His colleagues are under many obligations to him for having given to his profession such a complete treatise, and they may now feel that their literature has a system which will compare favorably with any in the domain of human medicine.

EXTERNAL FORM OF THE HORSE AND AGE OF THE PRINCIPAL DOMESTIC ANIMALS (Extérieur du cheval et l'âge des principaux animaux domestiques) By Montané, Professor at the Veterinary School of Toulouse. 1 vol. in. 18, of 528 pages and 260 illustrations. (J. B. Baillierè and fils, 19 rue Hautefeuille, Paris).

Professor Montané has presented under a simple and concise form the most modern data relating to the subject of external form and those concerning the age of domestic animals.

The subject of external form has for object the consideration of the *mechanical* and therefore *saleable value* of the horse, by the examination of the age and of those said forms.

For the man who uses the horse, he is a *machine* to produce so much work. This machine has so much more value when the quantity of work is greater.

The examination of the external conformation indicates the extent of the possible services *at the present time*, while the age gives indications upon their *duration.* Both data complete each other; therefore, they must be attentively analyzed, so as to arrive at a knowledge, as perfect as possible, of the nature of an animal.

The determination of the age meaning a judgment upon the probable duration of the machine, it is necessary to follow it in its perigimations to verify the correctness of the appreciation made. For this, it is necessary to have the *description* of the individual and to keep note of all the external characters which will distinguish it from others alike. This description is a complement of the age.

Therefore, the entire subject of external form includes the study of the *age*, the *description* and the conformation.

This last must be considered to the statical and dynamical point of view.

In the former, it includes an *analytical* point of view in

which all the various parts of the body, the *regions*, will be successively examined independently, and a *synthetical* including: (1) the relations of regions between themselves and with the whole, the *proportions;* (2) the relations of the various *lines* of the body towards the vertical and horizontal or the *aplombs.*

In the *dynamic*, the conformation enters in *motion* for the production of work. Its numerous manifestations form a physiological whole known as *action.*

Finally, and to give a practical use, there is necessity to consider into a final chapter, *examination of the horse offered for sale*, the rules to follow to make a good examination of the conformation.

Age, description, regions, proportions, aplombs, actions, examination of the animal offered for sale—such are the various parts which compose the work of Mr. Montané, and which constitutes Volume XXII. of Cadéac Encyclopædia.

CORRESPONDENCE.

THE VIRTUE OF ACCURACY.

NASHVILLE, TENN., Dec. 9, 1902.

Editors American Veterinary Review:

DEAR SIRS:—In looking over the REVIEW this morning I notice on page 806 the following:

"The veterinary colleges of the country without an exception that we have heard have larger classes this year than for half a decade."

This reminds me that you have had no report this session from "The Collin Veterinary Medical College."

I will state that the *college building* has been sold at public auction. Its occupant is now paying rent at so much per month. There is only *one* student in attendance, as against *two* last session, which is a decline of 50%.

Yours truly, G. R. WHITE.

IN the State of New Jersey the State Medical Examining Board, with and after the next examination, June, 1903, will require each candidate for examination to file with his application a recent photograph and an autograph signature duly verified before a notary public.

SOCIETY MEETINGS.

AMERICAN VETERINARY MEDICAL ASSOCIATION.

President Stewart has appointed the following Resident State Secretaries for 1902–03:

Alabama—L. Van Es, Mobile; *Arizona and New Mexico*—J. C. Norton, Phoenix; *Arkansas*—R. R. Dinwiddie, Fayetteville; *British Columbia*—Johnson Gibbins, 1003 Granville St., Vancouver; *California*—J. J. Summerfield, Santa Rosa; *Colorado and Utah*—Thomas Castor, Box 525, Trinidad; *Connecticut*—Thomas Bland, Waterbury; *Delaware*—H. P. Eves, 507 W. 9th St., Wilmington; *District of Columbia*—A. M. Farrington, 1436 Chapin St., Washington; *Florida*—J. G. Hill, 324 Forsyth St., Jacksonville; *Hawaiian Islands*—W. T. Monsarrat, Honolulu; *Illinois*—E. L. Quitman, 489 Jackson Blvd., Chicago; *Indiana*—J. R. Mitchell, Evansville; *Iowa*—Hal C. Simpson, Denison; *Kansas*—N. S. Mayo, Manhattan; *Kentucky*—D. A. Piatt, Lexington; *Louisiana*—E. Pegram Flower, Baton Rouge; *Manitoba*—W. J. Hinman, Winnipeg; *Maryland*—L. A. Nolan, Dillon and Fifth Sts., Baltimore; *Massachusetts*—Benj. D. Pierce, 27 Sanford St., Springfield; *Michigan*—G. W. Dunphy, Quincy; *Minnesota*—J. G. Annand, 414 First Ave., S. E., Minneapolis; *Mississippi*—J. C. Robert, Agricultural College; *Missouri*—T. B. Pote, 4046 Cottage Ave., St. Louis; *Montana* M. E. Knowles, Helena; *Nebraska*—H. Jensen, Weeping Water; *New Hampshire and Maine*—Lemuel Pope, Jr., 101 State St., Portsmouth, N. H.; *New Jersey*—T. E. Smith, 309 Barrow St., Jersey City; *New York*—Wm. Henry Kelly, 233 Western Ave., Albany; *Nevada and Idaho*—J. Otis Jacobs, Reno, Nev.; *North Carolina*—A. S. Wheeler, Biltmore; *North and South Dakota*—W. F. Crewe, Devil's Lake; *Nova Scotia*—Wm. Jakeman, Halifax; *Ohio*—A. S. Cooley, 1184 E. Madison Ave., Cleveland; *Ontario*—John W. Groves, Hamilton; *Oregon*—Wm. McLean, 328 Fourth St., Portland; *Pennsylvania*—C. J. Marshall, 2004 Pine St., Philadelphia; *Quebec*—Chas. H. Higgins, Department of Agriculture, Ottawa; *Rhode Island*—Thos. E. Robinson, 65 Main St., Westerly; *South Carolina and Georgia*—G. E. Nesom, Clemson College; *Tennessee*—W. C. Rayen, Nashville; *Texas*—M. Francis, College Station; *Washington*—Clarence Loveberry, Care of Frye-Bruhn Co., Seattle; *West Virginia*—F. P. Ruhl, Fairmont; *Wisconsin*—J. T. Hernsheim, Market and Exchange Sts., Kenosha.

Secretary Repp, under date of December 12, 1902, has is-

sued the following circular to the members of the American Veterinary Medical Association:

"The next meeting of the American Veterinary Medical Association will be held at Ottawa, Canada, September 1, 2, 3 and 4, 1903. The vote of the Executive Committee was unanimous for that city as the next meeting place. Invitations have been extended to us by the veterinarians of Ottawa and vicinity, by the Department of Agriculture of the Dominion, and by the civic authorities. Also Messrs. W. C. Edwards & Co., the senior member of which firm has been for many years a member of the Dominion Parliament and an extensive breeder of pure bred live stock, have invited the Association to visit their breeding establishment at Rockland, Ontario. There is great enthusiasm among the veterinarians throughout the Dominion of Canada and they are looking forward with great delight to this opportunity to entertain their professional brethren and their friends from the United States and Island possessions. Also veterinarians outside of the border of the Dominion are glad to have this opportunity to make the American Veterinary Medical Association a fact as well as a name and anticipate great pleasure in visiting their sister nation upon the north and partaking of the far-famed hospitality and good cheer of its people. The weather of Ottawa is especially delightful at the time of year when our meeting is to be held, and thus, added pleasure will be given to the members and their friends in visiting the many places of interest for which Ottawa and its vicinity is noted. Ottawa is easily accessible from all parts of the home of our organization by railroads and steamship lines. The trip will make as pleasant a vacation outing as could be devised. It is expected that the Ottawa meeting can be made to far surpass any previous meeting both in numbers in attendance and in new membership secured. The Association now numbers about 500. It ought to be 2000. It will soon reach that number if each member will exert his influence to accomplish it. It is urged upon each member that he will use his personal influence with veterinarians of his acquaintance who are eligible to membership to make application for such membership. Also it is very much desired that each member who decides to attend the Ottawa meeting, will by personal interview and by letter picture to his fellow members the pleasure and profit to be obtained from attendance at the meeting. If all will join in earnest effort to make the Ottawa meeting a grand success, the most sanguine will not be disappointed."

THE ILLINOIS STATE VETERINARY MEDICAL ASSOCIATION.

The Association held its twentieth annual meeting in Exchange Hall, Union Stock Yards, Chicago, Tuesday and Wednesday, December 2d and 3d, 1902, and was called to order by the President, Dr. Joseph Hughes, at 10.30 A. M.

The following members and visitors were in attendance during the meeting: Drs. R. G. Walker, Joseph Hughes, D. S. Jaffray, Jr., C. F. Greinier, J. F. Ryan, E. L. Quitman, Jas. Robertson, G. A. Lytle, L. A. Merillat, A. H. Baker, Robt. Gysell, F. W. Buecher, Chicago; N. I. Stringer, Watseka; L. C. Tiffany, Albert Babb, Springfield; J. F. Pease, Quincy; Clarence Mills, Decatur; W. F. Scott, Oak Park; J. S. Hollingsworth, La Salle; W. B. Lewin, Russell; F. H. Barr, Pana; W. H. Curtiss, Marengo; R. W. Story, Princeton; F. W. Kee, Sheldon; Geo. B. Jones, Sidell; H. A. Pressler, Fairbury; J. M. Kaylor, Barry; C. D. Maulfair, McNabb; W. J. Martin, Kankakee; W. C. Galbraith, Wheaton; F. B. Rowan, Bellevidere; J. H. Crawford, Harvard; E. F. Beckley, Rockford; Jas. Smellie, Eureka; C. P. Draper, Arlington Heights; J. T. Nattress, Delevan; W. H. Welch, Lexington; R. F. Hoadley, Yorkville; Thos. P. Brankin, Joliet; C. H. Merrick, Okawville; J. S. Spangler, Aurora; W. C. Hannawalt, Sheffield. Visitors:—Drs. H. W. Hawley, O. E. Dyson, Johnson, Redmon, Frost, Chicago; G. S. Gates, Blandinsville; Davis, Chicago. Also, Dr. Brimhall, of the State Experiment Station of Minnesota.

The minutes of the previous meeting were read and approved.

The President now delivered the annual address.

The following applications for membership were received, and on motion were duly elected: Drs. W. W. Welch, Elgin, (O. V. C.); W. C. Galbraith, Wheaton, (O. V. C.); Thos. P. Brankin, Joliet, (McK. V. C.); Chauncy D. Maulfair, McNabb, (C. V. C.); E. F. Beckly, Rockford, (C. V. C.); J. S. Hollingsworth, La Salle, (O. V. C.); W. H. Curtiss, Marengo, (C. V. C.); C. S. Hayward, Mattoon, (O. V. C.); J. M. Kaylor, Barry, (C. V. C.); F. W. Godsall, Chicago, (C. V. C.); D. S. Jaffray, Jr., Chicago, (C. V. C.); C. P. Draper, Arlington Heights, (McK. V. C.); F. W. Buecher, Chicago, (McK. V. C.); W. F. Scott, Oak Park, (Montreal V. C.).

The society then adjourned for luncheon.

At 2 P. M. the society reconvened and listened to a paper by Dr. L. C. Tiffany, of Springfield, on "The Mallein Test and Some Phenomena Observed in its Application." This was an excellent paper, and discussed at length by Drs. Pressler, Lewin, Stringer, Martin and Babb. Dr. Brimhall, of the Minnesota State Experiment Station, also kindly consented to make a few very timely remarks on the subject.

Dr. E. L. Quitman, of the Chicago Veterinary College, now read his paper, "The Therapeutics of Pyæmia and Septicæmia." This very interesting and instructive paper was discussed by Drs. Pease, Lewin, Stringer, Tiffany and Babb.

Dr. W. J. Martin, of Kankakee, now gave a very practical paper on "Veterinary Obstetrics."

The society now adjourned until 7.30, at which time the discussion was participated in by Drs. Quitman, Pressler, Pease, Mills, Stringer, Lytle, Babb and Nattress.

Dr. N. I. Stringer, of Watseka, now read his paper "Sclerostoma Tetracanthus." This very practical and interesting paper was discussed by Drs. Martin, Quitman, Mills, Welch and Smellie.

Dr. J. H. Crawford, of Harvard, read his paper on "Intestinal Antisepsis." Discussed by Drs. Quitman, Mills, Stringer and Walker.

A motion was now made and carried that the remainder of the meeting following the clinics be held at Chicago Veterinary College building.

Adjourned to meet 10 A. M. December 3.

At the clinic a very interesting lot of subjects were presented for inspection and operation. Drs. Hughes and Merillat kept the members interested with exhibitions of many different operations. The kind invitation of Drs. Baker and Hughes for luncheon was accepted, and a most enjoyable hour passed at the noonday meal.

At 3 P. M. the society reconvened and listened to a very excellent paper by Dr. A. H. Baker, of Chicago Veterinary College, on "Acute Pleurisy in the Horse." Discussed by Drs. Quitman, Stringer, Gyrell, Robertson, Lewin, Martin, Smellie, Pease and Babb.

The Auditing Committee reported the Treasurer's books as correct. The Treasurer's report showed a balance on hand of $83.69. Bills for printing and Secretary's fees were allowed to the amount of $23.65.

A motion was carried that the Secretary have 500 copies of the Constitution and By-Laws printed.

A motion was carried that our next meeting place be Champaign.

The election of officers for ensuing year resulted as follows:

President—Dr. H. A. Pressler, Fairbury.

Vice President—Dr. N. I. Stringer, Watseka.

Secretary—Dr. W. H. Welch, Lexington.

Treasurer—Dr. R. G. Walker, Chicago.

Board of Censors—Drs. J. F. Pease, Quincy; A. H. Baker, Chicago, and A. C. Worms, Chicago.

A vote of thanks was tendered Drs. Hughes and Baker for their hospitality.

Dr. Pressler then took the chair and appointed the following committees:

Programme—Drs. Albert Babb, Springfield; F. W. Kee, Sheldon, and J. F. Ryan, Chicago.

Arrangements—Drs. C. H. Merrick, Okawville, and J. T. Nattress, Delavan.

Legislation—Drs. E. L. Quitman, Chicago; Jas. Robertson, Chicago, and W. J. Martin, Kankakee.

Dr. E. F. Beckley favored the Association with a good song.

Society adjourned to meet at Champaign in February at the call of the President. W. H. WELCH, *Secretary*.

VETERINARY MEDICAL ASSOCIATION OF NEW YORK COUNTY.

The December meeting was held on the evening of Wednesday, 3d, in the lecture-room of the New York-American Veterinary College, with the largest attendance of the year. President Robert W. Ellis occupied the chair, and Dr. Charles E. Clayton was at the Secretary's desk. The following members were present: Drs. Ellis, Robertson, Burns, O'Shea, McCully, Bell, Bowers, Ackerman, Grenside, Schroeder, Mangan, and Wm. Herbert Lowe (honorary), of Paterson, N. J. Visitors present: Drs. J. Payne Lowe, of Passaic, N. J.; Drs. Kelly, Shaw, Anderson, Howe, Morris, Critcherson, Serling, Krauss, and a number of students from the college.

Dr. James L. Robertson read a paper entitled "The Pathology of Infection," it being an abstract of a communication in the London *Lancet*, by Sir J. Burden Sanderson, Bart. The high position occupied by the author makes his conclusions authoritative and they embrace the most recent advances along the lines treated. The paper is published elsewhere in this

number of the REVIEW. It was listened to with marked attention, and while no criticism was indulged in, it brought forth some timely remarks with regard to the importance of the germ theory of disease and the advantages of the microscope to the veterinary profession. It was suggested that some bacteriological study be undertaken by the Association during the coming sessions.

Dr. Bell spoke of the recent communication of Prof. von Behring upon the immunization of calves from tuberculosis by means of human sputum, and suggested that at last we were in a fair way to have an agent which would prevent the development of the "white plague," and predicted that it will soon be as popular among young bovines as vaccination is among the humans. It also gives promise of leading up to an immunizing serum for the human race.

Volunteer reports of cases were asked for, and many of those present had something of interest to recite.

Dr. Mangan, of Westchester, earned the thanks of the Association for his report of a case of "Pseudo-Leukæmia in a Dog," exhibiting the thyroid, bronchial and inguinal glands, the spleen, the liver, and kidneys—all being very much enlarged. This brought forth many queries in reference to the clinical symptoms, a point of interest being that the mother of this dog had (judging by the history of the owner) died of the same affection five years previously. Another point was that all those present who had seen the disease in dogs had observed it in setters.

Dr. W. D. Critcherson, of New York, narrated some cases of fracture, while Dr. Ellis asked for a diagnosis in a peculiar manifestation of intermittent lameness, which recovered. His own opinion was that it was a case of thrombosis.

Then Dr. F. C. Grenside stirred the members up by asking for an expression of opinion upon the subject of luxation of the patella in horses. Almost every member and many of the visitors had had much experience with the condition and many held decided ideas upon its pathology and causation.

Following the discussions, which were closed off only on account of the expiration of the evening, the election of officers took place, which resulted in the reëlection of those who had served the Association the previous year. They are as follows:

President—Dr. Robert W. Ellis.

Vice-President—Dr. J. Elmer Ryder.

Secretary-Treasurer—Dr. Charles E. Clayton.

President Ellis appointed the following committees to serve for the ensuing year:

Board of Censors.—James L. Robertson (chairman), R. W. McCully, George F. Bowers, D. J. Mangan, and Wilfred Lellman.

Judiciary.—Arthur O'Shea (chairman), E. B. Ackerman, Theodore A. Keller, Robert Dickson, and David W. Cochran.

Programme.—Roscoe R. Bell and J. Elmer Ryder.

President Wm. Herbert Lowe, of the Veterinary Medical Association of New Jersey, extended a most cordial invitation to all present to attend the annual meeting of his association at Trenton on January 8, for which he received a vote of thanks, and quite a number signified their intention of being present.

For the January meeting, Dr. W. C. Miller, house surgeon of the American Veterinary Hospital, has agreed to give an exhibition of the X-ray machine upon pathological specimens and in other ways. CHARLES E. CLAYTON, *Secretary.*

PASSAIC COUNTY VETERINARY MEDICAL ASSOCIATION.

The regular monthly meeting was held at 169 Paterson Street, Paterson, N. J., on Tuesday evening, December 2, 1902, with Dr. William Herbert Lowe, President, in the chair, and Dr. William J. Fredericks acting as Secretary. On roll-call the following members answered to their names: Drs. Anthony P. Lubach, Passaic; John H. Degraw, Paterson; J. Payne Lowe, Passaic; David Machan, T. J. Cooper, William H. H. Doty, and M. A. Pierce, Paterson; William J. Fredericks, Delawanna; and William Herbert Lowe, Paterson.

The minutes of the November meeting were read and approved, on motion of Dr. J. Payne Lowe, seconded by Dr. Cooper.

The next order of business being "unfinished business of the previous meeting," the President reported that the certificates of membership had been printed as ordered at an expense of $5, and that a number of the members already had their certificates, each paying fifty cents for the same, which from our nineteen members would bring into the treasury $9.50, so that the Association was actually making $4.50 by the transaction. On motion, the report was received and ordered entered upon the minutes.

Dr. Cooper was allowed to withdraw his "blacklist" proposition by unanimous consent.

Treasurer M. A. Pierce made the following report:

Receipts.

Sept. 16th.	Received from Dr. A. Machan, Secretary	$16.00	
Oct. 31st.	" " " " " "	10.00	
			$26.00

Disbursements.

Paid Guardian P. & P. Co's. bill for 200 letter heads; 200 envelopes, 100 postal cards and 200 schedule of fee cards	$9.75	
Paid the same company bill for 250 copies of By-Laws	9.75	
Paid the same company bill for 50 certificates	5.00	
		$24.50
Balance on hand		$1.50

It was regularly moved, seconded and carried that the Treasurer's report be received and spread in full upon the minutes.

The President then paid over to the Treasurer $11.50, which had been paid to him since the last meeting for certificates and dues.

President Lowe read part of a letter from Dr. W. Horace Hoskins, of Philadelphia, managing editor of the *Journal of Comparative Medicine and Veterinary Archives*, in which the editor said that he noted "the continued interest of your members in the work of the profession, and trusts that it will continue with added power and influence."

The President reported that he had received a letter from Dr. Roscoe R. Bell, of Brooklyn, N. Y., editor of the AMERICAN VETERINARY REVIEW, advising him that the December REVIEW would contain the full reports of the last three meetings of the Passaic County Veterinary Medical Association.

The President then made the following announcements: Next meeting of the Passaic County Veterinary Medical Association, Tuesday evening, January 6th, 1903. Annual meeting of the Veterinary Medical Association of New Jersey, at the Trenton House, Trenton, N. J., Thursday, January 8th, 1903.

One of the most interesting and instructive features of the programme to practitioners would be a lantern slide exhibition and address on "The Etiology and Prevention of Infectious Diseases of Animals" by Prof. Veranus A. Moore, of the New York State Veterinary College, at Cornell University, an eminent authority on comparative pathology and bacteriology.

Meeting of the State Board of Veterinary Medical Examin-

ers at the State House, Trenton, N. J., January 9th and 10th, 1903, for the examination of candidates for license to practice veterinary medicine, surgery and dentistry in the State of New Jersey.

The members resolved to attend the State meeting at Trenton, on January 8th, in a body.

The Association then listened with much interest to the reading of a paper on the "Examination of Horses as to Soundness," by Dr. David Machan. A profitable discussion followed on several aspects of this important subject to horsemen and veterinarians. The Association gave Dr. Machan a vote of thanks.

The President appointed Dr. Fredericks essayist for the January meeting.

On motion, the meeting adjourned at 10.45 P. M.

WILLIAM J. FREDERICKS, *Secretary pro tem.*

THE VETERINARIANS OF NEW ZEALAND.

What is probably the largest Conference of Veterinary Surgeons ever held in the Southern Hemisphere took place on August 27th and 28th last, at Wellington, New Zealand, under the presidency of the Chief of the Veterinary Division of the Department of Agriculture, Mr. J. A. Gilruth, M. R. C. V. S. There were twenty-one members of the Royal College of Veterinary Surgeons present, also two other gentlemen holding colonial degrees; the subjects discussed being departmental matters connected with inspection under the Slaughtering and Inspection Act, the Stock, the Dairy Act, hereditary unsoundness in horses, and the general work of the division, all of which gave rise to interesting discussions, and several valuable resolutions were passed.

After the conference had broken up Mr. C. J. Reakes, M. R. C. V. S., Assistant Chief Veterinarian, presented Mr. Gilruth with a handsome gold watch, stating that a unanimous desire had been expressed by the members of the profession resident in the Colony to convey to him in some practical manner their appreciation of the scientific value of his services to the Colony and to the profession; and that this presentation it was desired should be regarded, not as emanating from the veterinary officers of a government department, but solely as from the members of the profession in New Zealand.

In reply Mr. Gilruth said he was bound to say in the first place that it was quite out of order for the members of a depart-

ment to make a presentation to their chief on such an occasion. He could not fail, however, to appreciate the good feeling which had prompted them to make a presentation to him of so handsome a gift, which he should always prize. He desired to thank them all for the assistance they had rendered him in the carrying out of the work of the department, of the investigations in which they had been engaged, and their cordial support on all occasions. He thanked them for their loyalty to himself, and trusted the good feeling which existed among them would always continue.

In addition to being the Chief of the Veterinary Division of the Department of Agriculture, Mr. Gilruth is pathologist and bacteriologist to the Department of Public Health, and to the New Zealand Branch of the British Medical Association. He was appointed Plague Commissioner during the outbreak of bubonic plague in New Zealand two years ago, and his work is very highly valued by the medical as well as the veterinary profession, his opinion being in constant request in pathological and bacteriological matters.

VETERINARY MEDICAL ASSOCIATION OF NEW JERSEY.

The annual meeting of this Association will be held at the Trenton House, Trenton, N. J., on Thursday, January 8, 1903, the session beginning at 10 A. M. At this meeting officers for the ensuing two years will be elected and reports will be read by special and standing committees.

Dr. James M. Mecray will present a paper entitled "Necessary Qualifications for the Production of Clean and Wholesome Milk."

Dr. Veranus A. Moore, of Cornell Universty, will give an address upon "Etiology and Prevention of Infectious Diseases of Animals."

Dr. Moore's address will be illustrated by means of the stereopticon, and cannot fail to prove instructive and entertaining to those attending. GEORGE W. POPE, *Secretary.*

THE OHIO STATE V. M. ASSOCIATION

will hold its annual meeting in the Veterinary Department of the Ohio State University, January 13 and 14. The clinics will be held in the hospital connected with the University. All graduate veterinarians are invited and will be welcomed.

WM. H. GRIBBLE, D. V. S., *Secretary.*

NEWS AND ITEMS.

DR. J. D. COOPER, of Kansas City, Mo., has been appointed an assistant inspector, B. A. I., and assigned to Kansas City.

DR. WM. M. SIMPSON, of Malden, Mass., has entered the Chicago Veterinary College to take a special course in surgery.

THE prize Western steer "Shamrock," weighing 1805 pounds, was sold to a New York man for a holiday roast for his political friends.

DR. H. R. MCNALLY, who has been on the Sheep Quarantine Division in the Western States, has been transferred to the Meat Inspection Division, B. A. I., Kansas City.

"I. HAVE TAKEN THE REVIEW FOR FIFTEEN YEARS, and do not see how I could get along in my practice without it."—(*James S. Culbert, V. S., Portland, Indiana.*)

DR. GEO. M. GLOVER, instructor in veterinary science at the Colorado Agricultural College, Ft. Collins, Colo., was a visitor to the Chicago Live Stock Show in December.

EFFORTS will be made in both the Missouri and Kansas State Legislatures during their coming sessions to secure needed veterinary legislation.

ACCORDING to a news dispatch from Paris a regulation has gone into effect in Spain requiring the presentation of a certificate of good health by both parties to a marriage before a marriage license will be issued.

DR. E. B. ACKERMAN, of Brooklyn, N. Y., has been appointed by Governor Odell a member of the Board of Veterinary Medical Examiners to fill the unexpired term of Dr. F. L. Kilborne, of Kelloggsville, resigned.

DR. P. S. ISAACSON has succeeded to the practice of Dr. L. Van Es, at Mobile, Ala., the latter having accepted the chair of Veterinary Science at the North Dakota Agricultural College at Fargo, to which station he removed about Christmas.

DR. J. I. GIBSON, Denison, Iowa, late State Veterinarian, has been appointed a member of the State Legislature in the place of Hon. Hugh Langan, resigned. It will now be in proper form to address him as "Hon."

DRS. J. F. WINCHESTER, of Lawrence, Mass., and J. B. Paige, of Amherst, Mass., were in New York City Dec. 11, in attendance upon the annual meeting of the New York Alumni Association of Amherst College.

DR. J. W. CONNOWAY, of the University of Missouri, paid

Kansas City a visit in December. The Doctor has secured a Kansas City Veterinary College operating table for use in his class work at the University.

DRS. JOSEPH WINGERTER and J. H. Dellenberger, of Akron, Ohio, have just completed and occupied a large modern veterinary infirmary at the corner of Cedar Street and Orleans Avenue. There are departments for large and small animals, with ambulances for each.

DR. M. H. REYNOLDS, of Minnesota, visited the International Live Stock Exposition in Chicago *en route* to New Orleans, where he attended the meeting of the American Public Health Association as a member of the Minnesota State Board of Health.

A NOVEL CALENDAR.—The Denver Chemical Company, manufacturers of antiphlogistine, has sent to physicians and veterinarians a very unique calendar, illustrative of an original package of their well-known article, and being of service as a concise record of the flight of time.

DR. WILLIAM HERBERT LOWE, President of the Veterinary Medical Association of New Jersey, was the guest of Dr. T. Earle Budd, of Orange, New Jersey, on December 22d, at the annual dinner of the New England Society in commemoration of the landing of the Pilgrim Fathers.

DR. JAMES L. ROBERTSON, of New York, who attended the Minneapolis meeting of the A. V. M. A., visited his friend, Dr. Eugene Burget, of Ohio, and took in several of the county fairs of the Buckeye State, at one of which he officiated as a judge of equines. He returned to his home about Oct. 1, in the best of health.

SURGICAL SOAP SOLUTION.—M. Terrier (*L'Union Pharm.*) employes the following liquid soap for washing patients: White castile soap, 1 kilo.; soft soap, 1 kilo.; olive oil, 1 kilo.; water, 50 liters; napthol, 25 G.; lemon oil enough to perfume. Heat the soap and oils together in the water for twenty-four hours at least, then add the napthol and filter.

A NEW ANTHELMINTIC.—The menthane of thymol (*Union Pharm.*) is put forward as a powerful anthelmintic, the alkaline contents of the intestines decomposing it into thymol and other compounds, the former acting in the direction indicated. It occurs in white crystals, of little odor and taste, and is very slightly soluble in water.

IN the great work of stamping out contagious pleuro-pneumonia from the United States by the Bureau of Animal Indus-

try—1887–1892—the veterinary force "inspected 1,605,721 cattle in 166,951 herds, made 356,404 necropsies, purchased 21,961 head of cattle, and disinfected 7,438 premises. 7,438 cattle were found affected at the necropsies."—(*Law's Veterinary Medicine.*)

DR. REPP APPRECIATED.—The *Bulletin* has observed with much interest the enviable position taken by John J. Repp, V. M. D., of the Experiment Station, Ames. He is making a fine record for himself and for the State as a thoroughly equipped and highly scientific veterinarian. The greatest fear we have is that Iowa will not be able to retain him. He will be called higher.—(*Iowa Health Bulletin.*)

THE RESULT OF EXTIRPATION OF THE PITUITARY BODY IN ANIMALS.—In an effort to acquire a more exact knowledge of the pathology of acromegaly Friedman (*Berliner Klin. Wochenschrift*, May 12, 1902), excised the pituitary body in several cats and kittens, but he was unable to demonstrate that the total extirpation of this body exerted any influence over the functions, growth, or development of the animals.

"WITH not far from three thousand million dollars' worth of farm animals in this country, and with a single disease that sometimes destroys a hundred million dollars' worth of property in a year, it is not difficult to see the value of that precise knowledge which is required to deal promptly and efficiently with these plagues."—(*Extract from Dr. Salmon's Introduction to Prof. Moore's new work, "The Pathology of Infectious Diseases of Animals."*)

DR. CHARLES W. SHAW, veterinarian, of New York City, obtained a verdict last month against the city for $2500 in a suit over injuries sustained two years ago, when a runaway horse belonging to the Street Cleaning Department knocking him down, causing partial deafness. He was represented by Coleman & Coleman, they being his father-in-law and sister-in-law. The case was stubbornly fought by the Corporation Council, and much evidence was submitted.

IMMUNIZING HOGS.—Dr. W. E. A. Wyman, of Portland, Mich., writes under date of Dec. 18: "Just got back from Mastin, Kansas, where I immunized the most valuable herd of Poland Chinas in the world, belonging to Winn & Mastin. Results immense; never lost a case of swine fever of the grown ones and saved over 50 per cent. of sucklings in age of 5 to 14 days. This is a boon to the profession. I employed De Vaux antitoxin."

DR. NELSON P. HINKLEY, who has been located at Atlanta, Ga., for the past three years, has returned to the scene of his former labors in Buffalo. The change was necessitated through the ill-health which Mrs. Hinkley experienced in the South.

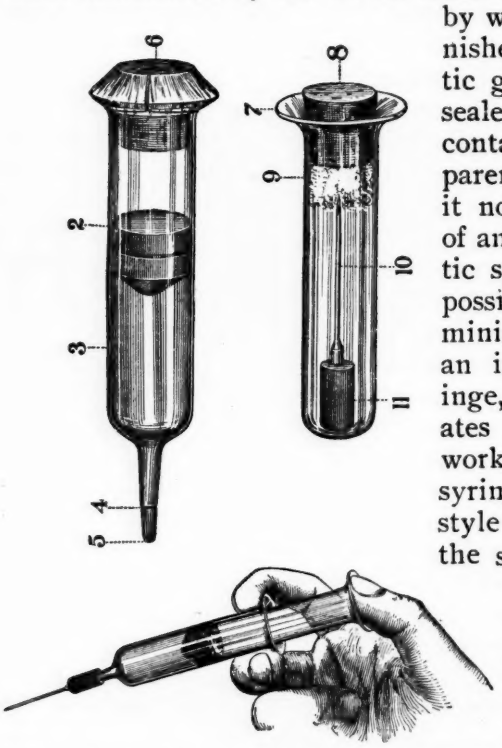
PECULIAR ACCIDENT.—A well-trained English pointer, the property of Mr. — Wilder, Kansas City, Mo., met with a rather unusual accident while out on a hunting trip recently. Through miscalculation the dog was forced to jump from an overhanging ledge to a roadway below, a distance of about 30 feet. As the result of this jump both olecranon processes were fractured. The fracture of the right one extending from the articulation downward and backward obliquely. The left one was shattered into several fragments. This accident completely incapacitated the dog for locomotion. Efforts to transfer its weight to the anterior limbs caused the dog to pitch forward onto his head. The case being a hopeless one owing to the nature of the fractures and the complete inability of the animal to go about, the dog was destroyed. Inquiry led to the information that numerous dogs as well as deer and other animals had jumped from this same precipice to the road below without apparent injury.

CARBOLIC ACID IN TETANUS.—J. E. Musgrave, M. D. (*Merck's Archives*) avers that the Bacelli treatment of tetanus by hypodermic injection of carbolic acid ranks with that of antitoxin in diphtheria. It transposes the very high percentage of mortality to that of recovery. It places a horrible, agonizing and fatal disease promptly under control, and he adds the report of one more successful case to the thirty-four previously on record. The penetrating wound in the foot of this patient had completely healed, after which tetanic symptoms developed, culminating in intense rigidity of the muscles. He began at once to give 1.2 grains of carbolic acid in a 2 per cent. solution every four hours, or 7.2 grains daily, hypodermically. The rigidity in general was lessened on the third day, but a few sharp exacerbations returned once daily. The treatment was kept up for two weeks without even cloudiness of the urine or a single untoward symptom until the patient had not the slightest symptom of lock-jaw, and was able to walk around.

SHOULD JUDGES TAKE COGNIZANCE OF HIDDEN UNSOUNDNESS IN SHOW HORSES?—At the recent National Horse Show the judges of heavy harness horses, it is said, established a precedent which not all authorities would care to see followed. Among the entries in one of the competitions was a high stepper that had been "nerved" for navicular disease and was con-

sequently unsound. The animal did not show it in the least, however, going perfectly sound and so brilliantly that two of the judges were ready to give it the blue ribbon, when the third judge, who happened to know all about the animal, disclosed the facts, with the result that instead of getting the blue ribbon, the handsome high stepper got the gate. Among horsemen who knew of the occurrence the decision of the judges gave rise to quite a spirited argument, many maintaining that the officials erred in taking cognizance of a hidden defect which did not appear in the show ring and which was, according to these critics, a matter for the veterinarians, not the judges, to pass upon.—(*New York Herald.*)

A NEW DEVICE FOR THE FURNISHING OF ANTITOXINS AND CURATIVE SERA.—An improvement in the package in which antitoxin and the various curative sera are furnished, has been introduced by the H. K. Mulford Company, Philadelphia, by which the antitoxin is furnished in the barrel of an aseptic glass syringe, hermetically sealed. The advantage of this container is immediately apparent to the profession, since it not only presents each dose of antitoxin in a perfectly aseptic syringe, but prevents the possibility of infection in administering antitoxin through an imperfectly sterilized syringe, and, furthermore, it obviates any uncertainty in the working of the ordinary piston syringes. The cut describes the style of the package containing the serum. The barrel of the syringe contains the antitoxin. In using, the physician breaks the sealed tube at point (4), by placing the thumb and the first finger of the right hand immediately over the etched line and pressing the finger and thumb slightly together, a little more pressure being exerted towards the end than towards the barrel of the syringe.



The needle is then taken from the sterile glass plunger and the rubber tubing (11) applied with a slight rotary movement over the fractured end of the syringe. The cap and paraffined cork (6) is then removed from the glass barrel of the syringe and the plunger used as indicated in the illustration. The plug (2) not only serves to retain the serum in the barrel of syringe, but also serves as a washer, and the plunger (7) is pressed against it to expel the antitoxin. This package has an especial advantage, in that the serum never comes in even momentary contact with the outside air, and the needle, plunger and syringe are all thoroughly sterilized, ensuring an aseptic injection. With this device it is not possible to inject air into the patient, and contamination of the serum is impossible.

FAITH TREATMENT FOR A COW.—*Buffalo, Nov. 27.*—An earnest citizen complained to-day at the Black Rock police station that his neighbor, Mr. Thompson, had left his sick cow unsheltered in a lot and had refused to get a veterinarian for it. The police summoned Thompson, who explained that he was a Christian Scientist. The desk sergeant was sceptical as to the effect of Mrs. Eddy's teachings on a cow, seeing that the cow could not think. "Be patient," said the owner, "and with a little more time, I will bring the cow up again to the height from which she has fallen. My cow had been very unruly before she was led into this false belief of sickness, and I decided that severe measures would be necessary. I have been watching almost continually out there in the lot for several nights and subjecting her to the soothing influence of our faith. Now she is much more docile than ever." A policeman was sent over to take a look at the cow and he reported that the "docility" appeared to him like the exhaustion which precedes death, so Capt. Potter sent for a veterinary surgeon, who ordered a stable and some medicine for the cow, the owner meekly protesting that his beast had nothing but a "false dream."

WORK OF THE BUREAU OF ANIMAL INDUSTRY.—From advance sheets of the Report of the Secretary of Agriculture, we glean the following brief synopsis of the work performed by the Bureau for the past year: "Under the inspection service of the Bureau of Animal Industry ante-mortem inspections for the year aggregate nearly 60,000,000, at a cost of a fraction over one cent each. The number of post-mortem inspections was nearly 39,000,000. The meat inspection stamp was affixed to over 23,000,000 packages of meat products, and the number of certificates of ordinary inspection issued for meat products for export,

exclusive of horseflesh, was 32,744. The quantity of pork examined microscopically and exported exceeded 33,000,000 pounds. Altogether the value of exports of animals and animal productions for the year amounted to $244,733,062. The clearances of vessels carrying live stock was 837, and the inspection of these vessels has reduced the percentage of loss in ocean transit to 0.13 per cent. for cattle, 0.89 per cent. for sheep, and to 0.65 per cent. for horses. . . . There were inspected and admitted from Mexico over 65,000 cattle, and fully 6,000 sheep, lambs and goats. Importations from Canada of cattle numbered only 27,716. We imported from that country 148,313 sheep. The strictest quarantine is maintained at the ports on the sea-coast in order to prevent the introduction of animal plagues. In addition to cattle and sheep there were quarantined, animals of various species for menageries and zoölogical parks. The Department veterinarian stationed in Great Britain treated with tuberculin all cattle over six months old destined for export to the United States. Of 1,067 cattle so treated, 139 were rejected. . . . The Bureau of Animal Industry has continued its investigations in contagious diseases with a view to their prevention or remedy. Over one and one-half million doses of black-leg vaccine were distributed during the year. Reports show that its use reduced the loss of cattle to 0.51 per cent. of those vaccinated. The use of this vaccine has thus saved to stock raisers many thousands of head of cattle."

LORD MACAULAY SAYS: "EVERY CLINICIAN BECOMES AN HISTORIAN."—Lord Macaulay briefly epitomized history as the "Record of Events." Be it so. The pleasant task of collection and verification of data falls upon the historian, who retells in an interesting and enthusiastic manner the lives and acts of others. In medical history as in secular the value of an epoch often rests upon the work of the individual, and the true portrayal of one incident in life lends color to the complete narrative. Acts not words illustrate the advance of progress in science and literature. The desire of one person to know precisely why another individual preferred certain methods to old-established forms necessitated history. The narrator of the events of daily life is the true historian and produces items of interest worthy of future history. The construction of records from this material constitutes the validity and worth of the article. What you do and tell to-day, if approved, your fellow man will perform to-morrow. Therefore the discovery of an aid to the burden of work-a-day life is more important than determining a

new chemic element. One helps the masses; the other invites speculation from the few. History thus recites incident. Incident depicts facts, and facts destroy theories, as the following abstract convincingly states:—"We had here a most formidable state of things to deal with: A woman in child-bed, with every indication of septicæmia—a double pneumonia, probably of septic origin, with constant pain in hip and lumbar region, with persistent vomiting and diarrhœa, temp. 105 degrees. A large tympanitic abdomen, small wiry pulse, cyanosis with finger nails quite purple. Dr. Tibbetts several times informed me that I could look for a fatal termination, so extreme was the case. . . . . the best thing to do was to curet, which was done, and followed by hot bichloride douches. . . . . no abatement in temperature. Morphine had to be given hypodermically to comfort patient, besides strychnine, cactus, brandy, and digitalis to support the heart's action. Just here I must say that I administered anti-streptococcic serum with very gratifying results. We also used injections of salt solution. I believe the benefit from these injections was more lasting than from those of serum. Antiphlogistine was applied over hip, lumbar nerves and sciatic nerve. This agent (antiphlogistine) was our mainstay in the treatment of both lungs besides. The abdomen became as large as before confinement, hard and resonant on palpation. Antiphlogistine was therefore spread all over the abdomen. I know of no preparation that has been brought to the attention of the profession of late years deserving of higher praise in all inflammatory conditions, no matter in what locality such may be seated. Poultices have been abandoned by the writer since the adoption of its use. Puerperal Septicæmia Complicated by Septic Double Pneumonia. Abscess of Thigh. —Recovery."—(C. C. PARTRIDGE., M. D., in *American Surgery and Gynecology*, October, 1902.) Had it not been for antiphlogistine, what would have been the result of the case? Again, had it not been for antiphlogistine, what pleasure would the attending physician have taken in making a public record of his case? The inference is marked. Here is a patient *in extremis* with the entire 900 official remedies of the Pharmacopœa at the disposal of consultant and attendant. Every surgical and medical accessory available, and yet one pharmaceutic preparation proves adequate to the emergency. Demonstrating beyond criticism that antiphlogistine should be applied in every process of inflammation. That antiphlogistine relieves blood pressure tension by induction of osmosis and dialysis.

PUBLISHERS' DEPARTMENT.

Subscription price, $3 per annum, invariably in advance; foreign countries, $3.60; students while attending college, $2; single copies, 25 cents.

Rejected manuscripts will not be returned unless postage is forwarded.

Subscribers are earnestly requested to notify the Business Manager immediately upon changing their address.

Alex. Eger, 34 East Van Buren St., Chicago, Ill., Veterinary Publisher and dealer in Veterinary Instruments, Books, and Drugs, is the authorized agent for the REVIEW *in Chicago and the Middle West, and will receive subscriptions and advertisements at publishers' rates.*

YOU KNOW IT ALL; but can learn more by looking at the bottom of page 6 (ad. dept.). This product, which is pronounced nearly as the first four words in this notice, but spelled differently, will be interesting to veterinarians having many dogs under their care, as no class of animals has so much skin trouble.

THE TABLES ARE TURNED over to you at a reduced price for a limited time, as is explained to you by Dr. Milnes in his advertisement on page 6 (ad. dept.), and those who need a table would do well to communicate with the Doctor at once, as the number is limited.

THE "TWENTIETH CENTURY DENTAL FLOAT" is attracting the attention of progressive veterinarians everywhere, as it is the first *real advancement* in VETERINARY DENTISTRY over the old hand floats. See page 16 (ad. dept.).

MAX WOCHER & SON'S new cuts in their ad. on page 18 (ad. dept.) are suggestive of two very important ends of the veterinarians work, and this house has instruments and appliances to meet every end.

"I AM very much pleased with Zenoleum. It was only yesterday that it showed its power to me as an internal antiseptic in a case of acute indigestion. After tapping three times to remove the gases formed by the fermenting food, the intestines having been filled again, I gave two ounces of Zenoleum in capsules with the result that my patient was soon relieved and eating hay."

F. R. WHIPPLE, V. S., Kewanee, Ill.

THE BOLTON DRUG CO., whose ad. appears on page 7 (ad. dept.), have everything that the veterinarian needs; not only veterinary supplies in general, but such specialties as Mallein and Tuberculin, always on hand. And their prices are right.

REVIEWS WANTED.

The Publishers will pay 25 cents a piece for any of the following: January and April, 1901; January and February, 1902; December, 1899; September, 1898; and March, 1896; and 50 cents a piece for September and October, 1900. Address: ROBERT W. ELLIS, D. V. S., Business Manager, 509 W. 152d Street, New York.